HOMELAND SECURITY AND EMERGENCY MANAGEMENT EDUCATION: AN INVESTIGATION INTO WORKFORCE NEEDS

By

Cameron D. Carlson, M. A.

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APPROVED:

Kevin T. Berry, Committee Chair
O. Shawn Cupp, Committee Co-Chair
Jungho Baek, Committee Member
Joseph Little, Committee Member
Kevin Thomas, Committee Member
Joseph Little, *Program Director*
Mark Herrmann, Dean, *School of Management*
Michael Castellini, *Dean of the Graduate School*

Abstract

The U.S. Department of Homeland Security (DHS) was created in the wake of the September 11th 2001 terrorist events. DHS's formation, the largest reorganization of a governmental agency in over 50 years, brought a new emphasis on the protection of the nation, its citizens and its infrastructure to government emergency management policy. Previously, the locus of emergency management had lain with the Federal Emergency Management Agency (FEMA), which had strongly emphasized natural disaster response. The rise of FEMA and DHS were only the latest iterations in a long history of policy shifts in this space driven by the perceived threats and prevailing political dynamics of the day. Arguably, the complex and intertwined nature of contemporary hazards calls for a dual emphasis in the homeland security and emergency management (HSEM) enterprise; that is, awareness and capabilities that span both fields.

As applied disciplines, scholarship in homeland security and emergency management has always had strong links to the evolving practice of the HSEM enterprise. In addition to providing research to guide practice, baccalaureate programs in both homeland security and emergency management have emerged to address the operational and educational capabilities required by practitioners.

In the post-9/11 environment, the increasingly complex demands placed upon our homeland security and emergency management enterprise require a better-integrated education. This study serves to demonstrate consensus regarding the significance of an integrated curricula in homeland security and emergency management meeting the needs of the workforce.

This dissertation is dedicated to Debbie; our daughters, Danielle, Courtney, and Shelby; and the entirety of our family. I am forever grateful for your love, support, and continued inspiration in this endeavor.

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List of Abbreviations

ACC	Army Chemical Center
AFSOR	Air Force Office of Scientific Research
BIBD	Balanced Incomplete Block Design
BLS	Bureau of Labor Statistics
BWS	Best–Worst Scaling
CDS	Committee on Disaster Studies
CEM	comprehensive emergency management
CHDS	Center for Homeland Defense and Security
CIP	Critical Infrastructure Protection
CND	Council of National Defense
CRP	Civil Relocation Plan
DCE	Discrete Choice Experiment
DCPA	Defense Civil Preparedness Agency
DHS	Department of Homeland Security
DOD	Department of Defense
DOJ	Department of Justice
DRC	Disaster Research Center
DRG	Disaster Research Group
EM	Emergency Management
EST	Eastern Standard Time
FCDA	Federal Civil Defense Administration
FDAA	Federal Disaster Assistance Administration
FEMA	Federal Emergency Management Agency
GAO	Government Accounting Office
GSA	General Services Administration
HB	Hierarchical Bayesian
HHFA	Housing and Home Finance Administration
HS	Homeland Security
HSC	Homeland Security Council

HSDEC	Homeland Security and Defense Education Consortium
HSDL	Homeland Security Digital Library
HSEM	Homeland Security and Emergency Management
HUD	Housing and Urban Development
IAEM	International Association of Emergency Managers
ICBM	Intercontinental Ballistic Missile
ICMA	International City Management Association
IDR	Interdisciplinary research
IRB	Institutional Review Board
KSA	Knowledge, Skills and Abilities
NAPA	National Academy of Public Administration
NAS	National Academy of Sciences
NASPAA	National Association of Schools of Public Affairs and Administration
NEC	National Emergency Council
NEMA	National Emergency Management Association
NGA	National Governors Association
NORC	National Opinion Research Center
NRC	National Research Council
NSC	National Security Council
NSF	National Science Foundation
NSHS	National Strategy for Homeland Security
NSS	National Security Strategy
OCD	Office of Civil Defense
OCDL	Office of Civil Defense Liaison
OCDM	Office of Civil and Defense Mobilization
OCDP	Office of Civil Defense Planning
ODP	Office of Domestic Preparedness
OEM	Office of Emergency Management
OEP	Office of Emergency Planning
OHS	Office of Homeland Security
OMB	the Office of Management and Budget

ONP	Office of National Preparedness
OPM	Office of Personnel and Management
PPD	Presidential Preparedness Directive
QHSR	Quadrennial Homeland Security Review
SBA	Small Business Administration
TURF	Total Unduplicated Reach and Frequency analysis
UAPI	University and Agency Partnership Initiative
UM	University of Maryland
UO	University of Oklahoma
USSBS	United States Bombing Survey
WMD	Weapons of Mass Destruction

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Chapter 1

Introduction

Homeland security and emergency management, as both professional practices and as academic disciplines, have sometimes been uneasy bedfellows, rife with competing priorities and methodologies. Yet, in the post-9/11 era, the professional bodies with responsibility of homeland security and emergency management have largely been combined, prompting the question of whether academic programs should likewise merge.

In the wake of the 9/11 terrorist attacks, a new federal institution was established to provide for the safety and security of the U.S. and its citizens. The Department of Homeland Security (DHS), was not created from scratch, however; instead it was a product of the largest single government reorganization in both function and size since the establishment of the Department of Defense more than 50 years' prior (Homeland Security National Preparedness Task Force Report, 2006 [Task Force, 2006]). The DHS's creation precipitated the consolidation of 22 existing federal agencies and departments (Painter, 2013), including the Federal Emergency Management Agency (FEMA), an organization which had long been tasked with oversight of the United States' management of natural disasters to include mitigation, preparedness, response and recovery efforts. The DHS now served as a central focus point to coordinate threat response and preparedness operational activities nationally (Borja, 2008).

Given the breadth of DHS's scope and its origins as a patchwork quilt of preexisting organizations, it is of little surprise that integration and coordination issues emerged shortly after the agency's establishment. Canada (2003) notes concerns of state and local observers regarding DHS's focus on terrorism as opposed to FEMA's traditional orientation on an all-hazards

approach. Hogue and Bea (2006) validate initial concerns about DHS's biased focus in the aftermath of its poor response in the wake of Hurricane Katrina in 2005. While they note "concerns about the effectiveness" of the organization and note concerns as to the efforts and organizational arrangement of a FEMA reorganization and its movement as either a stand-alone or internal organization to DHS, they provide that "the organization of federal emergency management functions is the latest development in a more than 50-year effort to find the most economical, efficient, and effective arrangements for protecting the nation from, and responding to, disasters" (crs-2).

In terms of education, Drabek (2007) highlights the lack of integration between the two domains, advocating for their better integration. He underscores the historical, curricular and cultural differences between the two domains, still emphasizing the need to build bridges between the two. As disasters have evolved to become more complex in the way they affect society, so too should homeland security and emergency management education, Drabek argues. McCreight (2009), echoing Hogue and Bea (2006), views the relationship between homeland security and emergency management education as that of cousins, with a deep enough shared past to sufficiently mandate integration both in practice and in educational objectives.

Just as on the professional side, the governmental bodies with oversight for homeland security and emergency management have evolved over the years, educational endeavors regarding homeland security and emergency management education have also evolved as various academic programs emerged to support the scholastic needs of the two domains. Predating the events of 9/11 and the creation of DHS, the FEMA Higher Education program (established 1994), had long been working to address the educational needs of a society facing more complex and rapidly changing threats (Blanchard, 2008). FEMA's efforts helped to establish a college and

university emergency management program curricular framework, as well as to defining core competencies still in use today (O'Connor, 2005). While developments within emergency management education continued during the early part of the 2000s, as noted by Blanchard (2005), Cwiak (2008, 2009, 2011) and others, Rollins and Rowan (2007) posit that the homeland security academic endeavors had not matured sufficiently at that time. They suggested that for educational objectives to develop, that homeland security would need to be better defined.

Bellavita and Gordon (2006) considered that pre-9/11 homeland security education to be in a preparadigm phase, noting the lack of agreement as to the range of topics considered relevant to the field. While programs would develop during this timeframe, the lack of agreement over curricula reflected the multifarious definitions of homeland security. Bellavita (2008) would expand on this train of thought, looking for a "truth" as to what homeland security is. His examination of the topic provides several definitions, some with a narrow focus on security in terms of a terrorism, while others consider the broader aspects of an "all-hazards" approach. These efforts mirror considerations noted earlier by Canada as well as Hogue and Bea (2006) concerning the focus of DHS and the role in which FEMA would play at the national level.

Kiltz (2012) argues for the necessity of a collaborative and integrated atmosphere within homeland security and emergency management higher education due to the complexity of the threats and hazards we face. In her review of challenges facing the HSEM enterprise, she underscores the interdisciplinary nature of both the cooperation and education required to face these complex challenges. Regarding the complex nature of the future environment we face, Ramsay, Cutrer, and Raffel (2010) note that with an aging workforce, the need to educate the next generation of practitioners will become all the more significant.

Problem Statement

As the disciplines of homeland security and emergency management education have evolved, they have lacked the interdisciplinary synergy necessary to provide for an integrated standard core curricula for a baccalaureate program meeting workforce needs.

Nature of the Study

This investigation was exploratory in nature, performing a quantitative analysis of survey results provided by practitioners within the homeland security and emergency management (HSEM) enterprise. The survey results, analyzed using the tool and methodology described in chapter 3 was used to scope and define what HSEM educational themes should serve as the core in an HSEM baccalaureate program.

Research Question and Hypothesis

What educational themes should serve as the core for an HSEM baccalaureate program? Due to the exploratory nature of this study, the review of the literature provided minimal support to develop a cohesive hypothesis concerning the determined outcome of this study.

Purpose of the Study

The purpose of this study is to investigate what educational themes homeland security and emergency management (HSEM) education practitioners determine necessary to serve as the core for an HSEM baccalaureate program.

Operational Definitions

The following terms were used within the context of this study.

Emergency management: "The term 'emergency management' means the governmental function that coordinates and integrates all activities to build, sustain, and improve the capability

to prepare for, protect against, respond to, recover from, or mitigate against threatened or actual natural disasters, acts of terrorism or other man-made disasters" (Public Law 109-295 [120 Stat. 1394] October 4, 2006, *Department of Homeland Security Appropriations Act, 2007* [also referred to as Post-Katrina Emergency Management Reform Act of 2006], Title 6, p. 40).

Homeland security: "Homeland Security is a concerted national effort to prevent and disrupt terrorist attacks, protect against man-made and natural hazards, and respond to and recover from incidents that do occur" (Bellavita, 2008 p. 2).

Homeland security framework: "The intersection of evolving threats and hazards with traditional governmental and civic responsibilities for civil defense, emergency response, law enforcement, customs, border control, and immigration" (U.S. Department of Homeland Security, 2010, p. viii).

Homeland security and emergency management enterprise: "The collective efforts and shared responsibilities of Federal, State, local, tribal, territorial, nongovernmental, and private-sector partners—as well as individuals, families, and communities—to maintain critical homeland security capabilities" (U.S. Department of Homeland Security, 2010, pp. viii–ix).

Of note, the use of the homeland security *and* emergency management as noted above, as a combined enterprise within this study, provides for a clear understanding of the linked missions within the homeland security framework and DHS Core Missions (noted below), as well as the mission of the Federal Emergency Management Agency: "to support our citizens and first responders to ensure that as a nation we work together to build, sustain and improve our capability to prepare for, protect against, respond to, recover from and mitigate all hazards" (U.S. Department of Homeland Security, 2014a, p. 1)

The DHS Core Missions:

- Prevent terrorism and enhancing security;
- Secure and manage our borders;
- Enforce and administer our immigration laws;
- Safeguard and secure cyberspace;
- Strengthen national preparedness and resilience. (U.S. Department of Homeland Security, 2014, p. 6)

In developing an understanding for the use of the homeland security and emergency management enterprise in this study, it is significant to note the historical and cultural differences between homeland security and emergency management as outlined by Drabek (2007). One of the key differentiators between the two domains is the "disaster agent," with homeland security having a greater focus on terrorism and FEMA reflecting a greater focus on "all hazards." FEMA, established in 1979 predates even the earliest of considerations for what would eventually become known as homeland security in 2002. FEMAs 20 plus years of existence and subsequent experience in managing a myriad of disasters within the U.S. prior to the creation of DHS would later serve to complicate the process of integration between the disciplines. Hildebrand (2016) provides further discourse to justify the use of a Homeland Security and Emergency Management enterprise rather than a homeland security enterprise in noting the cultural divide and emphasis between that of emergency management and homeland security. Policy considerations and perceptions, he notes, have continued to provide for diverging interests as related to both an all hazards to terrorism emphasis.

Educational themes: For the purpose of this study, the term "educational themes" is used to include topics and a wider expanse of subject matter that could comprise a course within a homeland security and emergency management program. Bellavita and Gordon (2006)

developed a set of "principal themes," subjects that could be taught for a course in homeland security. Based on this definition of themes, the term was adopted for this study, for use where the totality of several educational themes could fit within a single course.

Assumptions

1. Survey participants would have a sufficient background within the HSEM enterprise to provide responses representative of their experiences.
2. An event of national significance would not occur during the survey to introduce a recency bias within the results.
3. Survey participants would consider educational themes beyond discipline-specific homeland security or emergency management themes as they related to the enterprise or integrated needs of the workforce.

Limitations

1. An insufficient number of survey respondents reduced the statistical significance of the survey results.
2. To extend the investigational worthiness of this study, a survey population of at least 300 respondents would be required (Orme, 2010).

Delimitations

1. Survey participation was limited to those who were working or had retired as practitioners within the homeland security enterprise.

Summary

The introduction notes the development of the Department of Homeland Security and the subsequent consolidation of numerous organizations tasked to work together as part of an

emergency homeland security and emergency management enterprise. Considering the operational consolidation process and educational efforts designed to address homeland security and emergency management academic needs, the lack of integration has been noted by a number of scholars (Donahue et al., 2010; Drabek, 2007; Kiltz, 2009, 2011, 2012; McCreight, 2009). Integration as a theme and the interdisciplinary tone within these scholarly works serves to reinforce that students entering the workforce will be better prepared for the increasingly complex and boundary-crossing needs of the homeland security and emergency management enterprise. The purpose of this study was to investigate just what homeland security and emergency management (HSEM) education practitioners determine as necessary, to serve as the core of an HSEM baccalaureate program.

Chapter 2

Review of the Literature

Introduction

The first of the three sections within the review of the literature is illustrates that concerns over national security, coupled with real world events served to force an evolution in civil defense and preparedness efforts at the local, state and Federal levels. The ebb and flow of these events, resulted from and focused on both the internal security of the nation as well as concerns as to our ability to adequately respond to event, whether it be as a result of man-made, natural or technological consequence. The cumulative effect of the world events led to internal change and resulted an ever-increasing number of organizations developed to address these concerns. These organizations, which were both military and civilian based, demonstrate a long-standing nexus for homeland defense and security as well as emergency management activities which have been associated with one another almost from their very beginnings.

Ultimately, the sheer magnitude of civil defense and preparedness efforts would mandate increased political and presidential involvement and lead to the establishment of a federal agency to consolidate and manage mitigation, preparedness, response, and recovery activities. As this organization, FEMA, aside from consolidating preparedness actions, would become increasingly more involved in consequence management stemming from terrorism in concert with both the Department of Justice (DOJ) and Department of Defense (DOD). A further consolidation would occur in the wake of the events of 9/11 and serve to unify the capacities for an amalgamate of organizations in providing for an integrated capacity addressing not only our homeland security, but our emergency management capacities within the DHS. Today, DHS serves as the current

evolution in managing those activities which encompass the homeland security and emergency management enterprise.

The second section of the review demonstrates that modern day practice and occupations within the homeland security and emergency management enterprise have been heavily influenced by the scholarly activities of researchers and academics. The actions of these scholars were initially funded by the military, yet were oriented on the civil defense and preparedness necessities of a population at risk from either an event such as war or a nuclear catastrophe. Extending back to some of the earliest of historical disaster events within North America, researchers would serve to provide hypotheses regarding disaster response actions. These observations would not only serve to inform first responders and those who would manage these events and personnel, but likewise promote further disaster research.

The focus of disaster research which extended beyond the national security concerns of a nation which could face the possibility of a nuclear event, proved to help promote the continued study of natural disasters and the adverse impacts they could likewise pose to society. From these studies, civil disaster and preparedness practitioners could not only better understand the consequences of man-made, natural and technological disasters, they were more capable in understanding how they might better respond in the wake of an event as well. These actions contributed to the continued evolution of civil and disaster preparedness and helped shape the dual preparedness concepts of the period. While funding for the research may have come from the military, for an event such as war, it was also recognized that the response of recovery actions developed could be applied to other types of events and hazards as well.

The third and final section of the review deals with the extension and benefit of early research to the education of those who work within the occupations associated with homeland

security and emergency management. Early researchers have helped to create a lineage of researchers and academics who have helped to create environments addressing the academic needs of practitioners. Organizations and individuals affiliated with the FEMA Higher Education Program have worked extensively to not only develop individual courses, but provide for recommended curriculums for institutions of higher education teaching emergency management. This community has likewise worked to develop competencies, refine emergency management based knowledge, skills and abilities (KSAs) and other initiatives regarding higher education, albeit with only a marginal amount of input from practitioners.

Homeland Security educators have likewise benefited from the earlier efforts of researchers and have also worked towards a set of core competencies and educational courses and offerings based upon the needs of a developing construct. As the homeland security educator community has not existed as long as the emergency management educator community, it is continuing to evolve in a similar manner with a future initiatives considering the needs of both the public and private sector, undergraduate and graduate education and even accreditation. Similar to the efforts of the emergency management educators, there is an apparent lack of practitioner input as to what the educational needs of the workforce are.

It has been noted however that in the integration of homeland security and emergency management needs, issues regarding the assimilation of the two has been viewed far too narrowly. However, it is advocated by several educators, that the future of the two fields depends upon their ability to understand one another and the domains in which they operate. Others have even taken the step to provide a more integrated examination of the two disciplines to assess the needs of a future that will require practitioners to have the education needed in an environment

that encompasses an all hazards approach in dealing with the man-made, natural and technological disaster of our time.

Homeland security and emergency management, as concepts in practice and application have long standing ties. The two are inextricably tied to each other based upon the national security concerns presented the nation in both the past, present and future due to events that pose significant man-made, natural and technological risk to the infrastructure and the residents of the nation. The collective HSEM enterprise had benefited a great deal from lessons accumulated from practice and the observations and efforts of scholars. With the continuing evolution of the enterprise, we may do well to benefit from the feedback of practitioners in providing an education that best prepares those going forward to work to the benefit of our collective security.

The Historical Roots for Homeland Security and Emergency Management

The professional practice and academic study of homeland security and emergency management (HSEM) emerged as an extension of U.S. domestic civil defense efforts dating back to both World Wars and the Cold War period (Cumming & William, 2004; Hogue & Bea, 2006; Roberts, 2014; Sylves, 2007). Early HSEM had no permanent institutional champion; instead a myriad of short-lived governmental institutions oversaw various aspects of HSEM. Politics and fickle public opinion heavily shaped these organizations' specific missions and lifespans, and by extension, the approaches practitioners applied to address natural and man-made threats. Tierney (2007) advanced that disasters and other significant events could even serve to effect both the policy and organizational arrangements developed to address emerging needs. Blanchard (1985) likewise noted the impact of world events and how they would sway political considerations during the early years of civil defense. Eventually, FEMA would emerge to "set much of the

foundation for modern era domestic-based homeland security" based on its experiences in natural and man-made disasters (Sylves & Cumming, 2004, p. 18)

While the modern study of HSEM is a fairly recent phenomenon in the US, natural, man-made, and technological threats have played a defining role in many nations' histories. Massey (2007) uses the story of Rome's collapse to underscore that threats evolve, and, unless a state develops the ability to evolve to meet new and evolving challenges, a state could ultimately succumb to unanticipated challenges. Massey describes how hazards have evolved over time from the traditional (e.g., earthquakes, hurricanes, and wildfires,) to the generational (e.g., foreign energy dependence, aging infrastructure, and deficit spending). Regardless of the nature of the hazard, its societal impact is similar. Hazards have continued to evolve over time and accordingly, government responses to these hazards have and must continue to evolve as well.

Several scholars (Blanchard, 1985; Task Force, 2006; Kapucu, Wart, Sylves, & Yuldashev, 2011) look at the evolution of civil defense in relation to presidential priorities over time. This course of analysis is powerful, since the executive branch can have a tremendous impact on preparedness activities at the local, state and national level. Presidential administrations impact homeland security and emergency management by establishing or modifying policies or law and by establishing new programs or modifying preparedness activities to support domestic or international concerns (Task Force, 2006).

The World Wars and Intra-War Years: Preparedness at Home

The U.S.'s first official efforts to manage homeland security in the 20th century were made during WWI, when the Council of National Defense (CND) was established. The Homeland Security National Preparedness Task Force (2006) traces the CND's earliest of beginnings to the passage of the Army appropriations bill in 1916. The 1916 bill formed a

presidential advisory board including the Secretaries of War, Navy, Interior Agriculture, Commerce, and Labor as well as an Advisory Committee, who would be appointed by the President (Records of the Council on National Defense, 1995b). While U.S. leadership did not feel that WWI strategic bombing campaigns would have a domestic effect, the committee did function to coordinate resources and industries for national defense and to "stimulate" civilian morale. The committee was also to coordinate with the State governors to establish both local and state defense councils supporting the national effort (Homeland Security National Preparedness Task Force, 2006; Records of the Office of Civil Defense 1995c). However, the CND is noted less for its role in the protection of the population and its resources than on its mobilization. Consequently, once the war ended and demobilization was complete, the council was suspended in 1921 and soon ceased to operate as an organized entity (Task Force, 2006).

The next institutional attempt to oversee internal security and emergency management activities came in 1933, when President Roosevelt would create the National Emergency Council (NEC) by executive order. With Europe becoming a greater concern and with more aggressive actions taking place across the continent, civil defense concerns would reemerge. The NEC would consist of the President, Cabinet members and the head of almost all major federal agencies and departments. The NEC provided oversight and coordination for a wide range of requirements beyond civil defense, including economic relief through emergency civil works projects, and coordination with state directors concerning defense mobilization (Records of the Office of Government Reports, 1995a).

Roosevelt immediately reestablished the CND once the war in Europe broke out. With an increased push towards civil defense preparedness at the federal, state and local levels, tension soon developed between the three levels of government concerning the roles, authorities and

resources required to support these activities. States maintained they were provided insufficient authority to manage civil defense; local jurisdictions claimed they lacked sufficient resources for urban areas; both maintained that "nonattack" disaster preparedness was lacking due to the federal funding restriction providing for attack preparedness (Task Force, 2006). With the outbreak of war in Europe in 1940, Roosevelt would likewise advise governors to reestablish state and local councils as counterparts to the national level CND. State and local officials who had yet to take action were moved to do so and consequently created the Division of State and Local Cooperation, Mauck (1950). The Division of State and Local Cooperation initially worked to ease the economic burden on local communities impacted by the growth of wartime related efforts and its mission soon morphed to include civil protection as a response to the incendiary bombings in Europe and in London in particular. Additionally, at the federal level, the War Department formed advisory committees on "fire defense" to train firefighters and develop new techniques for meeting the challenges of an evolving set of hazards the U.S. had never previously faced (Mauck, 1950).

Roosevelt established the Office of Emergency Management (OEM) within the Executive Office of the President in May of 1940 by Executive Order (EO) 8248 (Harris, 1975). The OEM would provide oversight to several wartime activities to include that of the Office of Civil Defense (OCD). OCD as established in May of 1941 would consist of two main divisions: the Board for Civilian Protection, and the Volunteer Participation Committee. The OCD itself would be directed by New York Mayor Fiorello La Guardia, who would also manage the Board for Civilian Protection. In this capacity, he would manage what he considered the most important aspects of protection in establishing state and local councils for warning systems, shelters and air wardens, auxiliary policemen, firefighters and aircraft spotters (Mauck, 1950). What he would

avoid was those activities he considered "sissy stuff" (Mauck, 1950; Roberts, 2014). These activities would be managed by the Volunteer Participation Committee, headed by First Lady Eleanor Roosevelt. In this capacity, Mrs. Roosevelt developed volunteer programs supporting public health, nutrition as well as recreation. It should be noted that the draft executive order forming the OCD initially referenced creation of an "Office of Home Defense" (Mauck, 1950). Roberts (2014) suggests that the OCD's structure may have been designed specifically to allow for the development of volunteer programs for social services that eventually became merged with other dissimilar protection programs in a "New Deal" approach that FDR was known for. Roberts argues that this may have had a certain "genius" logic to it as it provided the OCD the flexibility to meet new threats as they emerged and focus on either the protection or social needs of the population.

After the attack on Pearl Harbor in 1941, public awareness and interest in civil defense jumped dramatically. The question of when to mobilize now shifted to how best to mobilize, utilizing the newly formed local and state defense councils, thousands of new volunteers undergoing first aid training, and an influx of individuals seeking to serve as auxiliary police, air raid wardens and firefighters (Roberts, 2014).

The OCD begin to evolve as its leadership changed. Both La Guardia and Roosevelt would leave their postings in 1942. Mauck (2015) reports that La Guardia's replacement, James Landis, would eventually step down as well once it became clear that there probably would be no significant need for civilian protection in the wake of an air raid or other military action. Still, by the end of the war, the OCD had more than five million register for volunteer activities through approximately 14 thousand local defense councils.

Truman felt that civil defense was a wartime function and did not intend for it remain after the war (Roberts, 2013). With the approaching end of the war, Truman would abolish OCD in June of 1945 "without making any provisions for a successor or even a planning group" (Jordan, 1966, p. xiii). With WWII's end, the national focus quickly turned from war and civil defense to celebration as troops began to return home. Following WWII, the United States Bombing Survey (USSBS) would issue three special reports on the effects of the nuclear bombs dropped on Hiroshima and Nagasaki. As Jordan (1966) indicates, the military told the federal government that civil defense was a requirement, and for it to be effective, it would have to be carefully planned for. These recommendations fell on deaf ears. The prevailing popularity of limited government meant that both the Truman Administration and Congress saw both emergency management and civil defense as state and local responsibilities (Kapucu, et al., 2011).

With limited response from civilian government, General Eisenhower decided to take action within the War Department, establishing the Civil Defense Board in November of 1946 (Jordan, 1966). The Board was chaired by Major General Harold Bull with the charter to develop War Department views and policies regarding responsibilities for civil defense internal and external to the department, its structure, authorities and actions the department should take pending the recommendations (Mauck, 1950). The report from the Board which is often referred to as "The Bull Report" (Task Force, 2006) concluded that civil defense was primarily the responsibility of civilian authorities, but that the military should be involved (Kerr, 1983). Of note, Roberts (2013) points out that the Bull Report found that civil defense had been "hindered" during WWII by the lack of observance of states' rights and a lack of understanding the

individual nature of municipalities. The Board findings would stress the need to achieve "buy-in" from governors and mayors in future efforts.

The Office of Civil Defense Planning (OCDP), established in 1948 by Truman, produced a study nicknamed the "Hopley Report," which recommended a plan for a permanent federal civil defense agency that would provide for the civil defense requirements in case of a war (Mauck, 1950). The report outlined the establishment of an Office of Civil Defense at the national level, either to report to the President or to the Secretary of Defense and that continued emphasis be placed on local and state offices. However, President Truman did not endorse the report (Roberts, 2013). While Truman's administration did acknowledge that states and local authorities were important to civil defense, the ODCP was transitioned to the Office of Civil Defense Liaison (OCDL) where it reported to the Secretary of Defense, instead of the President.

The Cold War: Civil Defense in the Shadow of the Soviets

Postwar relief was short lived amid rising concerns over deteriorating relations with the Soviet Union and their development and detonation of a nuclear test bomb in 1949. With this change in political climate, Truman was criticized by a nervous public as well as state and local officials, all of whom were concerned over a lack of clarity as to what they should do in the event of a crises (Blanchard, 1985; Task Force, 2006). Truman's responded by establishing the Federal Civil Defense Administration (FCDA) in December of 1949. Congress quickly passed the Federal Civil Defense Act of 1950, providing the FCDA the statutory authority to develop plans and work with states and local entities concerning civil defense preparations (Blanchard, 1985). The FCDA would be hampered by a number of problems and a lack of buy-in, as Congress and the Administration continued to insist that civil defense and emergency management were primarily a state and local responsibility (Kapucu et al., 2011).

Truman also signed into law the Disaster Relief Act of 1950, a law that aimed "to relieve the economic stresses of a disaster," although it was not intended to supplant current disaster relief services offered by state, local, and nongovernmental organizations (Mener, 2007, p. 8). However, Mener (2007) does point out that this was significant in that it was a first in transitioning the federal government from a minor role in providing disaster relief to the more substantial role it plays today. Considering the tumultuous times in which he governed— Soviet expansion into Europe, the funding of the Marshall Plan, the Korean War, Berlin Airlift and domestic emergencies such as the Kansas Flood of 1951 and Texas Ship explosion of 1947— Truman accomplished a great deal. He made progress in consolidating civil defense organizations and authorities, and, by forming and funding for the FCDA, he set the stage for future civil defense efforts (Blanchard, 1985; Task Force, 2006). In consolidating many of the diverse functions for civil defense however, six different agencies would still need to work under the umbrella of the FCDA to administer the program (Rubin, 2012). These agencies would include the Department of Defense, Commerce, Agriculture, General Services Administration (GSA), Health, Education and Welfare to include Housing and Home Finance Administration (HHFA). Truman's limited view of federal responsibility and the complex interagency coordination called for by the FCDA set the stage for a lack of focus, structure and support for future civil defense and emergency management efforts (Blanchard, 1985; Kapcu et al., 2011; Rubin, 2012).

Military involvement in civil defense and emergency management efforts would continue to progress between 1950 and the mid-1960s primarily in the form of military sponsored research. The research, from the earliest NORC studies, and later research performed by Disaster Research Center and the National Academy of Sciences (covered later in this paper) examined

civilian behavior in extreme situations ranging from natural to industrial disasters (Quarantelli, 1987).

Eisenhower was elected to office on a balanced budget platform. As a result he was strongly opposed to increasing funding for civil defense programs (Task Force, 2006). To a great extent, he would continue to advocate Truman's position that civil defense remain a state and local government function (Task Force, 2006). During the Eisenhower Administration, civil defense efforts emphasized the construction of home shelters and a nationwide shelter system. Later the administration would shift focus to major urban area evacuation, and finally back to home shelters again (Barker-Devine, 2006; Blanchard, 1985). Blanchard states much of what drove the shift in emphasis were the significant costs ($32 billion in the late 1950's) of supporting a nationwide program for shelters (p. 6). Some leaders, including FCDA Administrator Val Peterson recommended to "scale back or completely eliminate the shelter program" (Task Force, 2006, p. 9) altogether, reasoning that the blast of a Soviet explosion would completely doom American cities. Instead Peterson would advocate for evacuation, since much of the responsibilities would be supported by state and local communities, in line with Eisenhower's point of view about the division of responsibility across the three levels of government. President Eisenhower was also sensitive to how a civil defense buildup might be viewed by the Soviets during this period. Not wanting to inflame the "atmosphere of peace," he and several of his advisors would continue to oppose a civil defense buildup (Blanchard, 1985).

Nonetheless, controversy resulted from the pressure on state and local governments to encourage the individual construction of shelters. Congressmen Holifield of California, the ranking member of the Joint Committee on Atomic Energy and later the Military Operations Subcommittee, compared the concept of family-constructed shelters to asking families to

purchase a jet aircraft in creating an Air Force, Army or Navy (Task Force, 2006). In 1956, Holifield undertook one of the largest civil defense studies to date (Task Force, 2006). Taken aback by the findings of the Holifield Hearings and their recommendation for an enhanced shelter program, the President would form his own committee (Gaither Committee) to evaluate the readiness of the nation to defend itself in the event of a surprise Soviet attack (Task Force, 2006). The Task Force report also describes two other contemporary reports and studies, the Rockefeller Report and a separate examination by RAND, both would continue to emphasize the importance of civil defense to the nation. These reports, combined with increased Congressional pressure, the Soviet launch of the first Intercontinental Ballistic Missile (ICBM), and the Sputnik earth orbiting satellite, forced Eisenhower to react. The Administration reorganized existing civil defense institutions, merging the FCDA with the Office of Defense Mobilization to form the Office of Civil and Defense Mobilization (OCDM) (Blanchard, 1985). Blanchard indicates that the reorganization had little impact; the OCDM continued to promote a "National Plan" similar to previous policies "calling for the States local political jurisdictions to create a shelter system with the Federal Government providing advice and guidance" (p. 7).

Similar to his management of Cold War civil defense threats, the Eisenhower administration's policy toward natural disasters also placed a strong emphasis on the role of state and local entities (Roberts, 2013). During Eisenhower's term, the U.S. experienced numerous natural disasters according to Kapucu et al. (2011). Eisenhower signed more than 100 presidential disaster declarations and experienced a number of tornado occurrences resulting in the loss of hundreds of lives (p. 10). A viral outbreak in 1957–1958 resulted in approximately 70,000 U.S. deaths with little intervention from federal authorities (Kapucu, 2011). Roberts (2014) notes that, at the state level, it appears authorities viewed the role of civil defense as

addressing both Cold War concerns of nuclear war and the impact of natural disasters. During this period states would start to develop and utilize what would later be known as "dual-use" civil defense capabilities. Roberts highlights that "civil defense plans, personnel and equipment to prepare for attack and for natural disasters" (p. 55) would emerge as a matter of practice. Roberts continues that civil defense goals at the national level did not preclude the development of emergency preparedness goals and objectives being established at the state and community level. Of special note, the Task Force (2006) report indicates that Eisenhower would secretly commission the construction of a shelter during his time in office in the event that Washington DC were attacked. The bunker with the capacity to support 1,100 individuals would remain active from 1961, when construction was completed, until 1992, when a Washington Post article would expose the location and purpose behind the secret location Task Force, 2006).

Taking office in 1961, President John F. Kennedy changed the focus of civil defense during his tenure, noting that in the face of an irrational enemy, civil defense would basically serve as insurance for the civilian population (Blanchard, 1985; Task Force, 2006). To this end, Kennedy would embark upon a revised national strategy which no longer placed the burden of shelter construction upon the individual, but instead established a nationwide system for sheltering (Blanchard, 1985). Kennedy would also take steps to reorganize the functions of civil defense and create two separate agencies to manage the bulk of the civil defense efforts. The Office of Emergency Planning (OEP) and Office of Civil Defense (OCD) would be established as a result of 1961 Executive Order 10952 (Task Force, 2006). The previous OCDM was divided between the two new agencies with the OEP's stated purpose including advising the president in determining nonmilitary emergency preparedness efforts, including civil defense. OCD would

report to the Secretary of Defense and oversee the execution of the shelter program (Task Force, 2006)

As a backdrop fueling the continued civil defense funding and efforts, it is important to note the declining relationship between the U.S. and Soviets during this period. Gaddis (2006) and LaFeber (2008) examine the history of the Cold War and provide an overview of the escalating tensions between the two super powers. While Khrushchev had previously issued an ultimatum for western powers to withdraw from Berlin in 1959, he ultimately was forced to back down and entered continued discussions with President Eisenhower. The visit by Khrushchev to the U.S. in September of 1959 left the two powers open to continued dialogue with an improved outlook for future relations (LaFeber, 2008). Within months of Khrushchev's visit, the Soviet shot down a U2 spy plane over their airspace. The follow-on summit between leaders was canceled and relations deteriorated once again. In this context, Kennedy came into office. His initial 196 meeting with Khrushchev did not materially improve the relationship (Gaddis, 2006). U.S.-Soviet tension continued to mount with the construction of the Berlin Wall in 1961 and the Cuban Missile Crisis in1962. In light of the tense relationship with the Soviets, Kennedy's funding requests for civil defense were largely approved (Task Force, 2006; Winkler, 1984).

Blanchard (1986) notes that with the crises of the early 1960s diverted, both political and general population involvement and spending in civil defense dropped significantly in subsequent years. Blanchard attributes some of the drop in funding due to what he views as Kennedy's "cooling support" of civil defense. Kapucu et al. (2011) indicate that Kennedy clearly emphasized the significance of shelters as a means to save lives and that his reorganization efforts provided emergency management "a stronger civilian identity, but did little to bring a high level of focus to emergency preparedness and response related to other types of disasters"

(p. 11). It is also noted by Kapucu et al. that Kennedy was to sign approximately 50 presidential disaster declarations for significant events including Hurricane Carla in 1961, as well as Hurricanes Donna and Ethel which occurred shortly before his death in 1963. Kennedy is credited as having given a "spark of life to civil defense" that may have weakened, but was never extinguished (Blanchard, 1985).

Kennedy's successor, Lyndon B. Johnson initially indicated that he would continue to support the commitments to civil defense made by his predecessor (Blanchard, 1985). Johnson's commitment beyond what he had pledged would prove to be insufficient as he would fail to press Congress on the funding necessary to sustain the shelter program (Task Force, 2006). As a result of the lack of funding for the shelter and associated programs, Steuart Pittman, Under Secretary for Civil Defense and head of OCD resigned, and within weeks, the responsibility for civil defense would be move from the Secretary of Defense's office to the Army (Blanchard, 1985; Task Force, 2006). In actuality, the slide was precipitous. As the "all-consuming" nature of the Vietnam War began to take hold, congressional support for civil defense waned and a growing acceptance for the theory of Mutual Assured Destruction would rise to prominence. It became difficult to justify civil defense efforts of the scale and scope seen under the Kennedy administration (Blanchard, 1985).

The Task Force (2006) report outlines that "all-hazards" assistance resulting from the effects of numerous natural hazards started to gain advocates at this time at the expense of civil defense for attacks. In the wake of major natural disasters such as the 1964 Alaska Earthquake, Hurricanes Hilda and Betsy in 1965, and the Palm Sunday tornadoes of 1965, Federal Disaster Relief and loan assistance would be more commonplace (Roberts, 2013; Task Force, 2006). The Alaska Earthquake would prove to have a profound effect on the federal role of disaster relief.

Johnson would move after the earthquake to establish the Federal Reconstruction and Development Planning Commission and appropriate $23.5 million to rebuild and account for lost taxes in the wake of the disaster (Bea, 2007a). Small Business Administration (SBA) loans were likewise relaxed after the earthquake to allow individuals with prior debts and mortgages to receive loans and support they might not have otherwise received (Roberts, 2013). Remarkably, while the Red Cross had exceeded federal disaster relief by ratio of 1.6 to 1 in 1953, the federal relief would exceed Red Cross spending by 8 to 1 by 1965 (Roberts, 2013, p. 73).

Bea claims that Johnson achieved a first as a President in providing oversight for a natural disaster. Building upon the lessons learned from the Alaska Earthquake, both Congress and the Johnson administration leveraged previous disaster relief efforts in the response to Hurricane Betsy in 1965. Federal agencies including the OEP and the OCD, supported impacted areas with Johnson monitoring the federal agencies providing relief. Johnson would even mandate that his OEP director remain in the affected area to oversee operations. "Thus, President Johnson modeled a new role for the president as an active and engaged emergency manager" (Bea, 2007a, p. 93).

Under the Nixon administration, significant changes took place impacting the both the focus and direction of civil defense programs in redefining policy, and in placing emphasis on natural disasters and preparedness (Task Force, 2006; Yoshpe, 1981). Roberts (2013) advances that, as interest in civil defense and those aspects as related to attack began to decline during this period, presidents would begin to increase opportunities to provide for disaster assistance and relief. An example in this decline in interest was the lowest budget request for civil defense to ever take place to occur in 1971 (Blanchard, 1985). In contrast, the destruction wrought by Hurricane Camille in 1969 proved to demonstrate not only the significance of natural disasters

but also the government's willingness and ability to reach out and provide assistance. Nixon would declare coastal areas in Mississippi, Alabama and Louisiana federal disaster areas, deploy thousands of soldiers to respond and even send Vice President Spiro Agnew to the region to serve as his personal representative (Roberts, 2013). Despite the unprecedented response, public criticism and acknowledge deficiencies in the national response to Camille ushered in a hastened effort to focus on disaster preparedness (Kapucu et al., 2011; Task Force, 2006).

Coinciding with these events, Yoshpe (1981) details Nixon's instructions to George Lincoln, the Director for OEP to conduct a study on the civil defense program and the need for increased emphasis on plans, procedures and preparedness as related to peacetime emergencies. OCD and later DCPA would work with OEP on an interagency study to examine "civil defense activities as they related to the work of State and local governments" (p. 396). Yoshpe further details that the comprehensive interagency study conducted would serve as a "blueprint" for further developments concerning the disaster preparedness and the nation's ability to avoid, mitigate and respond to the challenges posed by natural disasters.

The Disaster Relief Act of 1969 established the concept of a Federal Coordinating Officer (FCO), a presidential designee tasked to oversee federal disaster assistance in an effected area (Task Force, 2006). Nixon also formalized the practice of the "dual-use" approach to civil defense and preparedness by introducing National Security Decision Memorandum (NSDM) 184 (Blanchard, 1985; Kapucu et al., 2011; Task Force, 2006). NSDM 184 additionally replaced the OCD with the Defense Civil Preparedness Agency (DCPA), placed under the direct authority of the Department of Defense (Roberts, 2013). As Blanchard (1985) indicates, while the stated mission of the DCPA was to provide preparedness planning support both for civil defense and natural disasters, it was clear that the latter was the true priority. In fact,

> after the Presidential decision was made in May of 1972 to formalize the shift in civil defense emphasis to local emergency planning by disestablishing the Office of Civil Defense and transferring its responsibilities to the new Defense Civil Preparedness Agency, very little high level executive interest was evidenced. (p. 18)

President Nixon would also further serve to evolve the face of disaster relief by signing of the Disaster Relief Act of 1974 into law (Kapucu et al., 2011; Task Force, 2006). The Disaster Relief Act, for the first time in U.S. history, allowed direct assistance and funds to be provided to individuals and families, instead of to states and local communities, after a disaster. Kapucu et al., (2011) noted that federal government involvement in disaster relief generally increased in this period, with federal funding levels increasing and the prominent involvement of a wide range of federal agencies (Roberts, 2013).

While Nixon's dual-uses emphasis was received warmly by the states and local jurisdictions, his policies were not without problems. First, a rise in inflation during the period would serve to erode the funding levels to a point not seen since Eisenhower (Blanchard, 1985) The establishment of DCPA, as was intended to consolidate the disaster assistance functions of government, ended with a scattering of the disaster related programs across a variety of federal agencies when it came to loans, response, planning and oversight (Hogue & Bea, 2006; Roberts, 2013). According to Hogue and Bea (2006) this scattering of emergency responsibilities exacerbated problems and create new challenges in providing for response and preparedness.

> Functions delegated to HUD included those relating to preparedness for, and relief of, civil emergencies and disasters. The Federal Disaster Assistance Administration (FDAA) was established in HUD to administer disaster relief. The General Services Administration (GSA) was given responsibilities related to continuity of government in

> the event of a military attack, to resource mobilization, and to management of national security stockpiles — duties assigned to the Office of Preparedness, later renamed the Federal Preparedness Agency, within GSA. The Treasury Department was given responsibility for investigations of imports that might threaten national security. (p. 12)

In parallel to real world events, Anderson's report on *Local Civil Defense in Natural Disaster* (1969) highlights some of the relevant research conducted by the DRC while located at the Ohio State University during this period. Completed during the early years of the Nixon administration, the report examined the functions and organization of local civil defense offices in natural disasters. Using previously conducted field studies and source materials undertaken by DRC researchers, the report provides detailed examples of the dual-use emphasis for the organizations. While day-to-day operations of a civil defense organization, for example, might focus on the training of individuals for a radiological attack, the report also indicates that this organization routinely worked with first responders such as fire fighters and police officers in mobilizing for an emergency or a natural disaster. The report also cites examples of civil defense organizations serving as the emergency center responsible for coordinating disaster response functions during large-scale events. While civil defense organization originally played a significant role in preparedness activities related to a potential nuclear attack, the dual-use policy would bring new responsibilities, such as coordinating police, fire, Red Cross, utilities, public health, volunteers and other responders during Hurricane Betsy in 1965. It is clear by 1972 that the concept of dual-use civil preparedness had been embraced by DCPA. DCPA's 1972 annual report (United States Defense Civil Preparedness Agency) outlines the expanded agency's formalized responsibility in supporting dual-use preparedness. To an even greater degree than Anderson's 1969 report, the 1972 report highlights instances of federal dual use capabilities,

including measures to provide for preparedness in case of an attack as well as support to state and local authorities for a wider range of activities to include natural disaster.

Upon taking office in 1974, President Gerald Ford would initially support Nixon's commitment to the dual use policy. Within the year however, the Office of Management and Budget (OMB) would revoke the DoD's funding to support civil defense efforts pertaining to natural disaster preparedness and mitigation (Task Force, 2006). In the face of congressional budget pressure, the Ford administration would be forced "to reduce or eliminate support of programs required for natural rather than for nuclear disasters." (Yoshpe, 1981, p. 405) State and local governments protested this change, as it would ostensibly require them to take on an increased financial burden for natural disaster response. Additionally, newly released intelligence studies found that the Soviets had made significant progress in civil defense relative to the U.S., further weakening the case for using civil defense infrastructure to support for natural disasters (Blanchard, 1985; Task Force, 2006). Based on these findings, the Ford administration initiated a new program within civil defense, the Civil Relocation Plan (CRP) that would be directed by the DCPA and conducted at the state level utilizing federal funds (Task Force, 2006). Budget cuts for DCPA drastically reduced funding for state and local emergency management programs, resulting in discontinuation of training and education programs (Yoshpe, 1981). Ford would depart the presidency having signed 76 Presidential Disaster Declarations—with "no exceptional natural disasters" and with a legacy of having significantly weakened dual-use civil defense activities (Kapucu et al., 2011; Sylves, 2014).

Upping the Federal Role in Natural Disaster Management: The Creation of FEMA

After taking office in 1977, President Jimmy Carter reversed many of the policies set by Ford (Yoshpe, 1981). Carter, as a former Governor, "knew disasters well, and was anxious to

respond to the call of other governors and the National Governors Association (NGA) for improvements in the organization of federal disaster management" (Sylves, 2014, p. 67). President Carter called for a number of studies early in his presidency to better understand the ability of the federal government to respond to a broad range of hazards to include those which were both natural and man-made (Kapucu, 2011). In the *1978 Emergency Preparedness Project Final Report* (NGA 1979a), funded by the DCPA and conducted by the NGA and the Center for Policy Research, would provide a series of policy recommendations Carter. The NGA Final Report (1979a) states that governors have "become increasingly concerned about the lack of a comprehensive national emergency policy, as well as the dispersion of federal responsibilities among numerous federal agencies which has hampered states' ability to manage disaster situations" (p. ii).

A separate National Security Council (NSC) study would focus on civil defense in the context of Soviet civil defense efforts (Yoshpe, 1981) and serve as the basis for the DoD requesting continued authority to retain control over civil defense efforts. The study would be undertaken with the support of Professor Samuel Huntington from Harvard "to determine what changes, if any should be made in current U.S. policies related to civil defense questions" (The White House, 1977, p. 1). Yoshpe suggests that, with the "step child" (p. 484) treatment of civil defense in previous years, the DoD was in a weak position to request continued control. Blanchard (1985) supports this argument, positing that the civil defense program was not "seriously addressed or funded" (p. 24) with the exception of the Kennedy years. He further elaborates that multi-hazard planning and integrated emergency management has been successful, and this results merited stronger support.

Carter would act, through an executive branch reorganization (Executive Order 12148), to establish FEMA and adopt many of the actions recommended in the NGA report (Task Force, 2006; Kapucu, 2011). Despite waxing and waning federal support, state and local governments had continued using dual-use civil defense capabilities to address peacetime (natural) disasters as well as prepare for wartime disasters. At the federal level, however, civil defense and disaster release efforts were spread across a number of organizations. At the federal level, civil defense and emergency management functions had been coupled and decoupled, but Carter saw FEMA as a chance to consolidate (Yoshpe, 1981). It is also important to note the significance of the Three Mile Island nuclear plant incident in 1979 as it relates to the creation of FEMA. The incident would further underscore the deficiencies in federal and state response in coordination for a near nuclear mishap and emphasize the need for improved disaster coordination and training (Task Force, 2006).

The creation of FEMA effectively served to consolidate many of the functions that previously made federal coordination cumbersome and difficult. As the lead agency for coordinating disaster relief and civil defense, it absorbed a "wide range" of responsibilities scattered throughout a number of federal organizations. By 1977, these included offices within the Department of Housing and Urban Development, Federal Insurance Administration, the National Fire Prevention and Control Administration, the National Weather Service Community Preparedness Program, the Federal Preparedness Agency of the General Services Administration (GSA) and the Federal Disaster Assistance Administration (Kapucu, 2011; Task Force, 2006).

President Reagan's civil defense priorities continued to build on Ford's efforts as he continued to emphasize the use of CRP to support evacuation as the key strategy for civil defense (Task Force, 2006). Reagan did however for the first time alter the Civil Defense Act of 1950 to

allow for funds under the Act to be used beyond attack related events to include natural disasters (Blanchard, 1985). While funds had been used in the past, this change would now allow for the explicit use of civil defense funds for this purpose. Reagan would also amend the Disaster Relief Act and create what is now known as the Stafford Act. This Act defined the disaster declaration process and provided greater clarity in the federal role of disaster response, giving definition to FEMA's role in particular (Task Force, 2006). The Act also added emphasis on the process of mitigation and prevention than in the past (Kapucu, 2011).

Reagan's successor, George H. W. Bush, would place less emphasis on the process of civil defense during his presidency, in large part due to the end of the Cold War and the fall of the Soviet Union in 1991 (Kapucu, 2011). The Task Force (2006) report provides that with the fall of the Berlin Wall in 1989 and the collapse of the Soviet Union in 1991, the threat of a strategic nuclear attack would vanish almost overnight. However, Bush would encounter several large-scale natural disasters during his time in office. Hurricane Hugo and Iniki in 1989 would displaced thousands of individuals causing billions of dollars in damages (Kapucu, 2011; Task Force, 2006). Shortly thereafter, the Loma Prieta Earthquake in California caused almost $6 billion in damages. FEMA, overextended with the scope of its mission, showed signs of response, coordination and staffing programs (Roberts, 2013; Task Force, 2006). These problems continued to severely hinder both the reputation as well as the operations of FEMA during Hurricane Andrew in 1992. In fact, Congress would commission a study after Andrew to examine its shortcomings (Roberts, 2013). In this examination, Roberts further elaborates that FEMA's civil defense and national security programs would come under fire.

FEMA would be criticized for failing to utilize its communications, transportation and rescue equipment for a variety of natural disasters, including hurricanes, floods and fires due to

concerns that bringing the equipment out might "expose" it to the enemy. One study by the National Academy of Public Administration (NAPA) pointed out that, with approximately 38% of FEMA's staff dedicated to national security emergencies, these individuals and assets would be much more effective in supporting a natural disaster response, considering the changing nature of national security emergencies (Roberts, 2013; Wamsley, 1993). The NAPA study suggested that FEMA should "demilitarize" (Wamsley, 1993).

A separate Government Accounting Office (GAO) report would likewise advocate for change consistent with the NAPA report, concluding that FEMA would need to break up its national security division to be more effective (Roberts, 2013). With the timing of these reports so late in the Bush administration, it would be left to the Clinton administration to develop the road ahead and to implement the necessary changes required to improve FEMA capabilities (Task Force, 2006).

President Clinton took office in 1993 and appointed a FEMA director who, unlike previous appointees, had experience as a former Director of Emergency Management for the State of Arkansas (Kapucu, 2011; Phillips, Neal, & Webb, 2011; Roberts 2013; Task Force, 2006). Clinton would also move on some of the recommendations from the NAPA and GAO reports to make the FEMA Director a cabinet level position ensuring that disaster relief would receive proper attention (Phillips et al., 2011). With FEMA's reputation at an all-time low, Witt moved to reorganize FEMA and integrated many of the suggestions of the NAPA report (Roberts, 2013).

Witt ensured that the mission of FEMA would focus on natural disasters rather than emphasize the national security aspects of civil defense. With the fall of the Soviet Union and with little credibility remaining in civil defense, Witt's efforts provided a more efficient and

reliable means of disaster response, welcomed not only citizens, but Congress as well (Roberts, 2013). Phillips et al. (2011) also indicate that Witt would place more emphasis on mitigation activities. Previously FEMA focused on response and recovery activities. Witt realized that significant savings could be realized to prevent or reduce the likelihood of a disaster having an adverse effect on states and communities.

The end of civil defense as it was known was completed in 1994 with the repeal of the 1950 Civil Defense Act. With the repealing of the Act, the Armed Services committee oversight on aspects of FEMA ended (Roberts, 2013). The remaining civil defense authority and funding were transferred to FEMA, essentially completing the evolution of civil defense into the all-hazards approach of preparedness advocated by the administration (Roberts, 2013; Task Force, 2006). The all-hazards approach would mean that FEMA would prioritize programs that addressed a number of hazards, versus those programs that focused on just one. This translated into FEMA having all personnel from defense and security staffs permanently reassigned to it and funding for civil defense transferred to FEMA (Roberts, 2013).

The Rise of Terrorism and the Era of Homeland Security

The Clinton Administration also defined a new relationship between terrorism and emergency management policy. Starting with the World Trade Towers bombing of 1993, concern over terrorism became more prevalent (Kapucu, 2011). Terrorist attacks, both domestic and overseas, began to influence preparedness policies (Sylves, 2007; Task Force, 2006). The attack on the Murrah Federal Building in 1995, which resulted in the deaths of 168 individuals, with more than 800 injured, was the most deadly domestic terrorist incident in the U.S. up to that time (Sylves, 2007). Concern over Weapons of Mass Destruction (WMD) would take the forefront. The DoD and later the Department of Justice (DOJ) and the Office of Domestic

Preparedness (ODP) would be chartered to provide training and response capabilities to aid state and local officials (Task Force, 2006).

In the mid-1990s, the term "homeland" as well as "homeland defense" and "homeland protection" emerged (Beresford, 2004). Beresford mentions that the early use of the terms was seen in National Defense Authorization Act for Fiscal year 1996 (U.S. Congress 1995) and later in a speech by Secretary of Defense Designee Cohen. Beresford demonstrates that a deliberate a distinction was made, most notably by the military, between the terms "homeland defense" and "homeland security." In these use cases, homeland security referred to consequence management from an event on U.S. soil, unlike the concept of DoD actions as related to homeland defense and civil support activities (see: Strategy for Homeland Defense and Civil Support, Department of Defense, 2005).

To evaluate the need for additional protective measures and policies to combat terrorism, WMD and create Critical Infrastructure Protection (CIP) programs, the U.S. Commission on National Security in the 21st Century (United States Commission on National Security/21st Century, 2001) also known as The Hart-Rudman Commission, study reexamined U.S. national security policy in light of "recent" changes to the security environment. Sponsored by the DoD, the report recommended the establishment of a cabinet-level National Homeland Security Agency that would be responsible for planning, coordinating, and integrating various government activities to be involved in "homeland security." The commission report describes changing nature of the security environment and describes the role of security both domestic and abroad in terms of our overall national security goals.

Roberts (2013) posits that during the '90s, with an increase in concern over terrorism FEMA would be prodded on a number of occasions to undertake a more assertive role in

preparing for and responding to terrorism. FEMA was asked to have a more proactive part in leading the preparedness and response activities in relation to terrorism; however, FEMA would sidestep this role, indicating that only DoD had the requisite capabilities (Task Force, 2006). To reinforce the task force report, Roberts additionally cites several other examples of FEMA, and Witt in particular, being asked to take a more active stance. As Roberts details, "natural hazards were a far great priority for Witt and FEMA than were national security and terrorist hazards" (p. 116). While Commission members, former civil defense staff and White House members may have had concerns about FEMA and it becoming more actively involved, they knew of Witt's relationship with the President and realized that it was not high enough a priority for Clinton to intervene. While many openly advocated for FEMA to restore its previous security capabilities, it is clear that this ran counter to the "Witt agenda" (Roberts, 2013).

When, President Clinton departed office, his contribution to FEMA's operational capabilities and FEMA's reputation were well-regarded (Phillips et al., 2012; Task Force, 2006). Beresford (2004) notes that the exercises and activities of FEMA, the DOJ, and the DoD oriented on counter terrorism planning and operations would diminish during this period with the increased level of emphasis on natural disasters and management of FEMA. The would essentially serve to signal the end of the era of civil defense, and a transition to the era of emergency preparedness during the early period the George W. Bush presidency.

Bush would enter office and continue many of the "homeland security" and emergency preparedness activities already in place (Task Force, 2006). The final report of the Hart-Rudman Commission, released within a month of Bush being sworn in, followed by legislation in the House of Representatives to establish the National Homeland Security Agency. This legislation was not successful in its original form, but would be key to later legislation that established the

DHS (Beresford, 2004). The Bush Administration did successfully create a policy committee to more closely examine and deal with recognized challenges to national security. The Counterterrorism and National Preparedness Policy Coordinating Committee served to address four areas of developing concern to include: Continuity of Federal Operations, Counterterrorism and Security, Preparedness and WMDs as well as Information Infrastructure Protection and Assurance (Task Force, 2006). The task force report provides that the creation of this committee would change how Clinton had dealt with these challenges in terms of "ad hoc" working groups and serve Bush Administration aims to consolidate these concerns within a single committee.

The Bush Administration also took significant steps to increase FEMA's responsibility for terrorism response (Clarke, 2008; Roberts, 2013). The Office of National Preparedness (ONP) was established within FEMA in May of 2001 to plan and prepare for the diverse emerging threats presented by chemical, biological and even nuclear weapons. The newly established office, while bringing a security and terrorism based focus back to FEMA, would provide it little time to adequately prepare for events shortly to come.

The terrorist attacks of September 11 drastically altered interest in the establishment of the new national agency. Within a month of 9/11, the Office of Homeland Security (OHS) was established by EO 13328 on October 8, 2001. OHS establish two separate entities within the White House, including the Office itself as well as the Homeland Security Council (HSC), composed of representatives from state, local, first responder as well as academic and private sector organizations (Borja, 2008; Task Force, 2006). Tom Ridge, the Governor of Pennsylvania, would be appointed to lead the new office, where he would have a prominent role in the development of the National Strategy for Homeland Security (NSHS).

The NSHS provided a framework to align the federal resources necessary to "secure the homeland against terrorist attack" (White House, 2002, p. viii). The comprehensive document focused on six critical areas as part of the overall goal and address: intelligence and warning, border and transportation security, domestic counterterrorism, protecting critical infrastructure, defense against catastrophic terrorism, and emergency preparedness and response (Task Force, 2006). Central to the strategy was the creation of a "Department of Homeland Security" to act as the primary federal coordination point for state, local and private sector entities as they related to these new homeland security activities (Task Force, 2006; White House, 2002). As this strategy being developed in tandem with a new National Security Strategy (NSS), Congressional pressure would continue to push for a "substantial reorganization" of the federal organizations that would be involved in homeland security and in June of 2002, the Homeland Security Act would establish the DHS.

The Task Force (2006) report underscores the significance in the creation of DHS as the largest single government reorganization to take place since the establishment of the DoD in the late 1940s. DHS would be significant in size, not only from a budgetary standpoint with an initial budget of $37 billion, but in personnel as well, with approximately 200,000 coming to it from 22 Federal agencies (Task Force, 2006). FEMA would transfer over to DHS in its entirety, losing its Cabinet level status, replaced by the Secretary of DHS as the principal Federal official for domestic incident management (Harrald, 2012). Roberts (2013) notes that FEMA morale eroded shortly after its transition to DHS. FEMA's loss of the independent agency status was compounded by an increase in political appointees without emergency management backgrounds. He furthers that this also lead to a dissatisfaction among career emergency managers in FEMA who observed a skewed emphasis in terrorism funding over that of all

hazards by a factor of 3 to 1 (p. 124). Cooper and Block (2007) reveal additional concerns. Several state emergency management directors told the Deputy Secretary for DHS shortly before Katrina that DHS's obsession over terrorism was undermining emergency management and national preparedness efforts. Terrorism had an obvious impact on FEMA and its ability to prepare for natural disasters while simultaneously focusing on terrorism preparedness (Roberts, 2013). As Roberts elaborates, it would be a natural disaster and not a terrorist event that would demonstrate the true limits of FEMAs capabilities.

A series of Hurricanes struck the coast of the U.S. in 2005; in particular, Hurricane Katrina would strain the federal, state and local response efforts (Harrald, 2012; Kapucu, 2011; Task Force, 2006). The United States Congress Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina (2006) posits that

> the failure of local, state, and federal governments to respond more effectively to Katrina — which had been predicted in theory for many years, and forecast with startling accuracy for five days — demonstrates that whatever improvements have been made to our capacity to respond to natural or man-made disasters, four and half years after 9/11, we are still not fully prepared. (p. 1)

The House Select Committee report did not make any recommendations regarding Katrina, however it reinforced the previous concerns noted by emergency management professionals (Hogue & Bea, 2006):

> For years emergency management professionals have been warning that FEMA's preparedness has eroded. Many believe this erosion is a result of the separation of the preparedness function from FEMA, the drain of long-term professional staff along with their institutional knowledge and expertise, and the inadequate readiness of FEMA's

> national emergency response teams. The combination of these staffing, training, and organizational structures made FEMA's inadequate performance in the face of a disaster the size of Katrina all but inevitable. (U. S. Congress Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, 2006, p. 158)

A contrarian view put forward by Roberts (2013) states that the size and scale of the event was unprecedented. In comparison to other large scale disasters, such as the 1906 earthquake in San Francisco, the 1927 floods of the Mississippi, or Hurricane Andrew in 1992, as well as "countless other events, the federal government's response to Katrina was both speedy and massive" (p. 131). Additional detail is developed to demonstrate that local and state officials were likewise partially to blame in not having made evacuations mandatory and that at the individual level, many decided to wait out the storm even after the mandatory evacuations orders were given.

The U.S. Senate Committee on Homeland Security and Government Affairs report (2006) would provide recommendations based upon their investigation. In the report, *Hurricane Katrina: A Nation Still Unprepared,* several core recommendations are made, including that FEMA be abolished in favor of a larger agency known as the National Preparedness Response Authority. The report also recommends that future senior management designees be qualified with experience and a background from either the military, emergency management or with other experience in similar type positions. While FEMA would not be abolished, the109th Congress would consider the history of FEMA in the context of the many changes undertaken in its transition as an autonomous agency prior to DHS, to the role function it would serve as one of several organizations within DHS at the time of Katrina (Bea, 2007b).

The Post Katrina Emergency Management Reform Act of 2006, referred to here as the Post Katrina Act, expanded the scope of FEMA's mission as well as restored some authorities previously removed (Bea, 2007b). Aside from FEMA having received additional authority and oversight, the Post Katrina Act (P.L. 109-295, 2006) would prohibit the Secretary of DHS from significantly reducing the authorities, responsibilities of functions of FEMA or the transfer of those functions elsewhere in DHS. This Act would also serve to mandate that the FEMA Administrator selected, had a background in either homeland security or emergency management with executive leadership experience of at least 5 years.

Post-Katrina Gulf Coast recovery was a slow process lasting into the Obama Administration. As of 2009, no comprehensive evaluation of the Post Katrina Act has taken place (Gall & Cutter, 2012). In fact, Gall and Cutter suggest that despite the requirement for an annual federal preparedness report, only one had taken place by 2009, reporting on activities through the end of 2007 (U.S. Department of Homeland Security [DHS], 2009). The Obama administration would recognize the shortfall in reporting (Gall & Cutter, 2012) and in 2011, his Presidential Preparedness Directive (PPD-8) would mandate the development of national preparedness goals, annual reporting requirements as well as directives to strengthen planning and those capabilities required for worst case scenarios (Gall & Cutter, 2012). They offer that, by all appearances,

> it is business as usual: no major improvements in the nation's critical infrastructure, hazard mitigation environmental regulation, catastrophic planning or medical preparedness. It is safe to say that Hurricane Katrina did not trigger the same type of sweeping organizational changes as were seen post-9/11. (p. 209)

Summary of the Historical Roots for Homeland Security and Emergency Management

In the preceding section, we develop an understanding of the tremendous in which the homeland security and emergency management enterprise has evolved and the sway presidential administrations hold over preparedness, civil defense, emergency management and homeland security initiatives (Blanchard, 1985; Kapucu, 2011; Task Force, 2006). Early civil defense efforts related to national security concerns and the possibility of attacks against the U.S. "homeland" (Blanchard, 1985; Task Force, 2006). These efforts evolved over time. During the Cold War focus on the potential of a nuclear attack and both the sheltering and evacuation strategies which could be employed in the event of a war became paramount. A dual-use concept for civil defense, at first informal in nature, began to develop in the early 1960s to address preparedness for both a nuclear attack as well as for natural disasters concerns (Blanchard, 1985; Task Force, 2006). Dual-use civil defense would become a formalized program in the early 1970s to address "the full spectrum of disaster" both those in peacetime and war to assist State and local governments (U.S. Defense Civil Preparedness Agency, 1973). Yoshpe (1981) reinforces the changes to civil defense in this period as state and local officials would become effective in advocating that federal authorities needed to be more responsive in meeting their needs. He also underscores their dissatisfaction in the complex coordination required to obtain federal support for state and local needs in having to work with up to five separate federal agencies to receive disaster assistance.

President Carter established FEMA after witness significant incidents such as Three Mile Island, and the response and recommendations provided by the National Governors Association Report (NGA, 1979a). FEMA took a leading role in providing support for both natural disasters and civil defense. It provided a central point for state and local governments to request disaster assistance. FEMA served as a focal point for both disaster assistance and civil preparedness, and,

with the passing of the Stafford Act under Reagan, have an even more prominent role in all aspects of emergency and consequence management (Kapucu, 2011; Task Force, 2006). FEMA's role changed once again after the fall of the Berlin Wall and demise of the Soviet Union. FEMA's inadequate response to Hurricane Andrew and several other natural disasters prompted public outrage. Programs within FEMA supporting civil defense were criticized and a call was made for them to "demilitarize" (Wamsley, 1993). Clinton would enter office and make several changes within FEMA to provide it a more prominent role in disaster response. Among his changes was the appointment of an experienced emergency manager as the FEMA Director, and the second was to make the position a cabinet level appointment (Task Force, 2006).

The repeal of the Civil Defense Act of 1950, by Clinton in 1994, served to consolidate what remaining civil defense functions within the Federal government within FEMA (Roberts, 2013). During this period, the all-hazards approach to emergency management took hold while the U.S. simultaneously experienced emerging threats from terrorism. (Task Force, 2006). Despite these new challenges and even in the face of newfound responsibilities for terrorism, FEMA was later criticized for not taking a more proactive stance regarding terrorism while placing greater emphasis on other FEMA related functions (Roberts, 2013). With these new challenges, and an evolving view of the homeland and the security considerations required to keep it safe occurred, more deliberate efforts took place to consider emerging threats and the required national capabilities. This closer examination, undertaken by the Hart-Rudman Commission, recommended that a larger agency be established to better integrate the national resources needed to establish a National Homeland Security Agency (United States Commission on National Security/21st Century, 2001).

The terrorist attacks of 9/11 led to consolidation of federal functions with oversight for U.S. homeland security. The formation of DHS, a product of the single largest government reorganization since the DoD was established, place a strong emphasis on terrorism and man-made associated disasters (Task Force, 2006). The federal government's skewed emphasis on terrorism, resulted in a funding factor of 3 to 1 for terrorism-related programs compared to all others, and prompted State emergency managers to express concern over neglect of FEMA's natural disaster management programs (Roberts, 2013).

Hurricane Katrina struck the gulf coast region in 2005, demonstrating the insufficiency of state, local and federal capabilities in such a catastrophe. Although many agree that FEMA's preparedness had eroded post 9/11 (Hogue & Bea, 2006), Roberts (2013) posits that the federal response was far better than what had been provided in the past; however, it was hampered by the sheer scale of Katrina. He advances that many of the problems encountered at the local and State level, were less of a result of FEMA, than they were as problems created by individuals who chose not to evacuate. In the wake of Katrina, the Federal government would again call for another large-scale reorganization to ensure a similar event would never happen again. DHS and FEMA preparedness and responses were examined to ensure that an all-hazards emphasis would be placed on preparedness. Civil defense focused initially on national security and later evolved to take into account dual use concerns over natural and man-made disasters. It later evolved once again to place a more concerted emphasis on emergency management and natural disasters only to evolve once again into a program that would be required to adjust its focus to terrorism in the face of 9/11. Katrina demonstrated the pitfalls of such a strong emphasis man-made or terrorism focus, and resulted in reforms to create an organization capable of addressing both man-made and natural disasters.

Role of Research in HSEM Education

Scholarship has greatly influenced the modern-day practice of homeland security and emergency management. As Wilson (2001) remarked, there is a direct link between the theoretical advancement of the hazards/disaster as an applied research discipline and the development of the practical basis of knowledge that underpins the field of emergency management.

While accounts of disasters go back about as far as recorded history, it was not until the 20th century that the first defined research was conducted on the social aspects of disasters (Quarantelli, 1991). Some of the earliest of efforts to examine disasters in an organized manner include Samuel Prince's Columbia University dissertation in the field of sociology, examining the Halifax explosion of 1917, a man-made disaster that killed 1,963 individuals and injured more than 9,000. Prince's dissertation is regarded as the first systematic effort within the field of disaster research (Dynes & Quarantelli, 1993; Perry, 2007; Quarantelli, 1991). Drabek (1986) notes,

> Interspersed within Prince's descriptive portrait, however, were numerous hypotheses – statements that transcended the detail of the single event. It was Prince's derivation of relational statements that might be generalized to comparable future events that set his work apart from that of other observers of disaster responses. In short, he used this event as a case record from which to derive primitive elements of social theory. (p. 2)

Disaster Research: An Applied Discipline With Military Roots

Organized disaster research developed during World War II, a product of the military's civil defense and preparedness concerns. Based upon military studies undertaken during WW II bombing operations in Germany and Japan, research showed that the citizens of these countries

were amazingly resilient in the face of horrific circumstances (Phillips et al., 2011). These finding demonstrate the very real national security concerns of the U. S. and underscore the rationale as to why the military became interested in the stability of American civil society in the face of a similar event. Would the U.S. remain stable or might it collapse if a major U. S. city were attacked? Similar concerns and later research studies would culminate in the formation of formal research units, funded by the military, to examine a number of differing disasters and serve to fuel efforts far beyond the initial concerns and research concepts. These units included the National Opinion Research Center (NORC), the Disaster Research Center (DRC), and the Natural Hazards Research and Application Information Center, which all played significant roles developing academic and research capabilities in this field and providing an empirical basis for much of what we now know as homeland security and emergency management.

Disaster research was funded primarily by the military, resulting in the early emphasis on research that provided useful results on themes relevant to military priorities (Quarantelli, 1991). "Reflecting its applied origins," Tierney (2007) explains, "the field focused on describing and categorizing social behaviors and processes that are common to disaster events and on identifying best practices for managing hazards and disasters" (p. 506). This early focus on reactions of civil society to nuclear and biological warfare resulted in a climate where the applied trumped the abstract: "theoretical concerns generally took a back seat to practical ones" (p. 506).

After World War II, both military and civilian social scientists studied various social and psychological aspects of the Japanese and Germans (Quarantelli, 1988; Sewell, 1989). In fact, Dr. William Sewell, having earned his PhD at the University of Minnesota in Sociology, was already "a fairly well established sociologist" (p. 89), when he entered the military during the war with an assignment to conduct social science research. Sewell and others like him serve as

an example of the military's reliance on academia and research in to develop organized studies on a wide variety of social science topics. His interdisciplinary work on morale resulting from the U.S. Strategic Bombing Survey (USSBS) would serve to further research and in developing methodology when he and others would return to academia (Sewell, 1989). Quarantelli (2009) furthers the discussion to underscore that many who conducted research as part of the U.S. Strategic Bombing Survey Study (USSBS) would later return to academia after their time in the service and become some of the most prominent researchers in the decades to come.

It is interesting and somewhat fortunate for later research that some of the initial lessons learned from WW II did not receive greater circulation in their time. Much of what these lessons revealed from the USSBS would later be reinforced through the research of others, including Dr. Irving Janis from Yale's Department Psychology. Janis (1951) conducted research work on behalf of RAND and the U.S. Air Force, finding similarly to the USSBS studies that there was no general breakdown of social order, looting or widespread mental health issues resulting from wartime situations and Allied bombings.

The "American urgency" to study disasters grew largely from the uncertainty of how the public would respond if the U.S. were ever attacked. In an article entitled Gaps and Goals of Disaster Research, Powell (1954) articulated that the methods of modern war, especially atomic war, reinforced the need for diverse research. Quarantelli (1987), a pioneer and major contributor to disaster research, notes that the earliest research efforts focused on the practical concerns of wartime situations. In Disaster Studies: An Analysis of the Social Historical Factors Affecting the Development in the Area, Quarantelli (1987) chronicles the three sequential research efforts between 1950 to 1965 that established modern "disaster studies" (Quarantelli, 1994).

Quarantelli describes exchanges between the Army Chemical Center (ACC) and the National Opinion Research Center (NORC), a noted social science research center located at the University of Chicago. The ACC wanted NORC to conduct a review of the 1948 Donora smog event. The Donora smog event resulted in an estimated 25 deaths after a temperature inversion occurred, trapping high concentrations of industrial contaminants (Helfand, Lazarus, & Theerman, 2001). The initial reflection on the original fieldwork that had been conducted to examine the Donora event was rejected by NORC (Quarantelli, 1987, 1988), which cited that too much time had lapsed since the event rendering interviews less effective. Still, the military's interest to examine an industrial disaster is noteworthy. These types of investigations would become increasingly more common place. Further contact between the military and NORC ultimately led to a project examining both natural and industrial disasters. Quarantelli (1987) mentions that the research proposal emphasized how "empirical study of peacetime disasters will yield knowledge applicable to understanding and control, not only of peacetime disasters, but also of those which may be anticipated in the event of a war" (p. 289).

Studies examining various types of peacetime disasters became the standard for the field. Quarantelli notes (2009) that the research design was developed to answer a wide range of overarching questions which were of consequence to research efforts both at the time and with later efforts as well:

1. Which elements in a disaster are most frightening or disrupting to people and how can these threats be met?
2. What techniques are effective in reducing or controlling fear?
3. What types of people are susceptible to panic and what types can be counted on for leadership in an emergency?
4. What aggressions and resentments are likely to emerge among victims of a disaster and how can these be preventing from disrupting the work of disaster control?

5. What types of organized work efforts effectively and which do not? (p. 21)

The overriding aim of disaster research was to understand the consequences of a wartime situation on the behavior of the population. Researchers acknowledged that there were differences in what could be anticipated between a peacetime disaster as compared to a wartime event. However, Quarantelli underscores that

> effort was made to study peacetime disasters that appeared to have the closest parallel to a wartime situation, that is a population subjected to some kind of sudden and widespread attack. The best research case scenario visualized, that never materialized would have been a major earthquake in an urban area. (2009, p. 22)

Drabek would later point out (1986), that there would be disagreement among social scientists as to the degree in which human responses to a nuclear event or even war might parallel those of a natural disaster. Quarantelli (2004) would later reflect in an interview that

> the fundamental argument of the sociologists was that human beings in groups in the face of crisis or stress are going to act in a predictable and uniform manner . . . whether the impetus for the evacuation is radiation fallout or a hurricane doesn't matter. (pp. 324–325)

NORC's first military sponsored study, published in 1954 in a three-volume set titled *Human Reactions in Disaster Situations*, would remain relevant for years to come (Quarantelli, 1988). Discussions between the ACC and NORC concerning the Donora episode eventually led to the initial contract and the master plan to study disasters in 1950 (Quarantelli, 1988). This master plan investigated human behavior in a wide range of disasters. Fritz and Marks (1954) detail the study and the process of interviewing more than 1,000 individuals who had recently been involved in events including tornadoes, train wrecks, aircraft accidents, fires, and earthquakes. These studies provided detailed results concerning human behavior and what might

be anticipated during a time of war and other pertinent information regarding disaster preparedness (Fritz & Williams, 1957). This research also helped to debunk popular stereotypes and reinforce some more accurate ideas of what was already known about behavior during disasters, providing salient observations specific to disaster management and disaster agencies involved in the response of an event. Fritz and Williams (1957) observe, "the challenge for future planning lies in the development of realistic plans for organizing, training, integrating and coordinating the actions of both the general populace and the formal disaster agencies" (p. 50). Research-based recommendations were intended to assist civil disaster coordinators, managers, and other municipal level managers, in their efforts to plan for and prepare for the eventuality of similar events in the future.

Two other studies from this time period are worth note. The University of Maryland (UM), under contract from ACC, studied the psychiatric aspects of disaster and consequently undertook a more focused examination of the psychological reactions and behavior of individuals than that of the NORC study (Quarantelli, 1987). The UM study investigated 11 disasters, including tornadoes, plane crashes, a chlorine gas incident as well as a methyl alcohol poisoning episode.

Additionally, the University of Oklahoma (UO), under contract with the Operations Research Office at John Hopkins University, conducted a study focused on the effects of atomic weapons on troops and explored the psychological aspects of soldiers exposed to these types of weapons. The UO study also analyzed social responses to other natural disasters to include tornadoes, an explosion as well as a dormitory fire at UO. In the final report for this study, A Study of the Effect of Catastrophe on Social Disorganization (Logan, Killian, & Marrs, 1952), UO researchers included a section titled "Principles of Emergency Administration." The section

provides a narrative describing a number of emergency management principles, such as favoring coordination over directive management. The studies also observe that agencies are most effective when they come into a new area with a "minimum of publicity and at least appear to work through local leaders and agencies" (p. 111). These comments provided in 1952 are just as applicable to emergency managers today. Observations and recommendations intended to aid civil defense and emergency preparedness practitioners in their work, would become increasingly prevalent in later writings as disaster researchers had additional opportunities to observe behavior in emergency situations.

Quarantelli (2009) later reflected that while the "study of community officials" was secondary in importance to the sociological/psychological research being conducted, it was increasingly apparent that organizations faced significant challenges managing disaster events. He mentions that during a NORC study, researchers were redirected from their interviews with victims to instead interview organizational officials. Quarantelli notes that NORC researched viewed these observations, while not reflected in the final report, to be more impactful than the findings on disaster myths that did make the final report.

Building on the NORC studies, the National Academy of Sciences (NAS) formed the Committee on Disaster Studies (CDS), a multidisciplinary organization within the division of Anthropology and Psychology of the National Research Council (NRC). The CDS conducted a number of studies up until 1962 (although it is noted that CDS's name was changed in to the Disaster Research Group [DRG] in 1957). Quarantelli (1987) believes that the DRG's founding marked a turning point where social science research evolved to include a more diverse focus on aspects regarding a disaster. Disaster research sponsors still remained primarily interested in applied peacetime research that could be extrapolated into a wartime situation. However, the

emphasis had shifted to examining the behavioral aspects of disasters. The sources of sponsorship and funding for the research also shifted. While funding for the NORC studies had initially come from the Army, funding for the CDS and DRG studies would come from a wider group of sponsors including the Surgeons General of the Armed Forces, the National Institute of Mental Health, the Ford Foundation as well as the Office of Civil Defense Mobilization (OCDM) and the Office of Emergency Planning (OEP) (Moore, Bates, Layman, & Parenton, 1963; Dynes & Quarantelli, 1975).

Fortunate for the developing field of disaster research, the Disaster Research Center (DRC) was established in 1963 at Ohio State University. Quarantelli and Wilson (1980) emphasize the significance of the DRC in terms of it keeping the field of disaster research alive once the DRG ceased operations in 1963. The CDS and DRG had thrived in the 1950s. After these organizations ceased to exist, the DRC provided the necessary continuity to maintain CDS and DRG archives and to prevent a gap of knowledge and research from occurring in previous and ongoing disaster studies.

The DRC was founded by Dynes, Haas and Quarantelli, all hailing from OSU's Sociology Department, as a result of a research proposal to study organizations under stress. Initial funding proposals to establish the center, explains Quarantelli (2009), fell flat both with the university as well as with the National Science Foundation (NSF). Fortunately, while the research group was awaiting final word from the NSF, they were approached by officials from the Office of Civil Defense (OCD) who for unknown reasons had been provided a copy of the DRC's proposal (Quarantelli, 2009). In addition to the OCD, the Air Force Office of Scientific Research (AFSOR) expressed interest in the proposal and in contracting with the center for

research services. The general proposal, which secured the DRC a rather large contract for the time of $200,000, listed five major objectives:

1. To collate and synthesize findings obtained in prior studies of organizational behavior under stress.

2. To examine, both by field work and other means, precrisis organizational structures and procedures for meeting stress.

3. To establish a field research team to engage in immediate and follow-up studies of the operation of organizations in community disaster settings, both domestic and foreign.

4. To develop, in coordination with a concurrent project, a program for field experiments and laboratory simulation studies of organizational behavior under stress.

5. To produce a series of publications on the basis of these four objectives, with special emphasis on recommendations concerning the effective emergency operations of organizations and other matters pertinent to civil defense planners. (Quarantelli, 1987, pp. 295–296)

The DRC's five general objectives demonstrate a shift in the research interests of researchers, and, to an extent, their primary sponsors—the military. Earlier NORC studies analyzed individual variability in behavior (Fritz & Marks, 1954). By contrast, the DRC expanded emphasis "on the study of organization experience stress" (Quarantelli, 1987, p. 295).

Objective five as outlined within the proposal specifically marked a shift in desired outcomes for disaster research. Quarantelli (1987) noted that the fifth objective, deriving recommendations to manage peacetime and wartime emergencies more effectively, was the true interest of the DRC sociologists. At the time, peacetime disasters were the responsibility of the Office of Emergency Planning (OEP) and not the OCD, but OEP was not supporting research or studies of disasters at that time and the OCD was willing to fund research.

Escalating tensions between the Soviet Union and the United States drove increased interest in the U.S. citizenry's possible reaction to a nuclear war between the two superpowers. According to Quarantelli (2009), the Berlin Blockade and the Cuban missile crisis accelerated

these growing concerns. Oral histories obtained later from key political/military decision makers indicated that they strongly felt that there would be an adverse public reaction and "widespread" panic and social breakdown should a war occur. Additionally, the OCD had the means to fund these studies, having had its budget almost doubled under the Kennedy administration (Civil Defense and Homeland Security: A Short History of National Preparedness Efforts, 2006). This convergence of concern, funding and interest, noted by Quarantelli (2009), would serve to generate more funding for this single DRC project than the OCD had provided to CDS for the entirety over its 11-year existence.

Here, we see the beginnings of what is referenced as a "dual track of emergency management" (Phillips et al., 2011. p. 6). While not covered in this portion of the literature review, the funding demonstrates redundancy institutions as well as in the research being conducted. The DRC would continue to conduct OCD-sponsored research of peacetime disasters with an informal understanding that "DRC should add a concluding chapter on possible extrapolations of its findings to wartime situation in the reports the Center would write about the behavior and problems of different kinds of emergency organizations in natural and technological disasters" (Quarantelli, 1987 p. 300). Quarantelli states that the OCD, as the sponsoring agency, did little to direct or influence both what should be studied, or how it should be examined. He underscored that the focus of this research can be traced back to the

> applied research funding pattern in American society. To the extent that agencies with strong applied orientation of a particular kind emerged as the research funders rather than governmental organization supportive of basic research (it should be noted that the initial DRC proposal went to NSF not OCD), indirectly, there is going to be a reflection of this in what is assumed, studied and reported on by researchers. The applied agencies did not

> directly dictate much of anything but indirectly, from the start they have implicitly provided much of the research agenda and like all agendas, the one that initially set the stage become the one that tended to be used. (p. 306)

The founding of the DRC at OSU (later relocated to the University of Delaware) served as a significant milestone for the field of disaster research (Tierney, 2007). The three founders of the DRC have been highly influential in furthering continued efforts in developing the fields of disaster and hazards research and ultimately played a major role in what we now recognize as emergency management. Quarantelli pushed beyond the realms of the theoretical and concentrated on providing practical and applied solutions for the challenges he observed (Oyola-Yemaiel & Wilson, 2005). Quarantelli's, Haas's, and Dynes's legacies are underscored time and time again within the vast repository of studies, reports, and findings found within the DRC archives.

Thomas Drabek, a research assistant for the DRC at the time of its establishment, recalls a telephone call from Russell Dynes early in November 1963, informing him that the three codirectors have decided to examine an explosion that had just occurred at the Indiana State Fairgrounds the previous evening, killing 81 and injuring more than 400 individuals (Drabek, 1997). Using the same rapid response field study technique as developed in the NORC studies, Drabek notes this as his initial study as part of DRC and the mission he and his group were provided. In their mission, they were to

> (1) Identify which organizations were most involved in the emergency response; (2) conduct interviews with organizational directors so as to determine their role and major activities during the response; (3) ascertain the range and type of disaster planning they had completed; and (4) obtain relevant reports and memoranda. (p. 23)

With the onsite research and interview process complete, Drabek noticed that organizational as well as operational problems had developed as part of the response. In "Disaster in Aisle 13" (Drabek, 1968), he details the efforts and coordination between fire, civil defense, law enforcement, and even the Red Cross are covered in an incredibly straight-forward manner. He makes numerous observations concerning the planning, emergency response, resourcing and integration of both first responders and the agencies chartered to manage disasters within this jurisdiction. For example, Drabek observes that the Civil Defense Coordinator had responsibilities for plans that extended to include peacetime disasters, both those that were man-made as well as natural.

> Rather vague plans, dealing with a very large disaster such as a nuclear attack, had been formulated by the County Civil Defense Director. Plans of this nature could have been modified to fit a smaller scale disaster. In fact, taking into account the legal responsibilities of the Indiana CD (e.g., responsibility for both man-made and natural disasters), this kind of preparation would have been more logically anticipated here than in other states where CD does not have so broad a legal responsibility. This was not the case; plans for peacetime disasters had not been fully formulated. (p. 171)

In a return to the site a year later, Drabek and his team followed up on the initial interviews taken in the wake of the event. While some improvements were found regarding hospital interest in planning, the updating of resource lists and communications capabilities, the report did point out one significant problem. "While most organizational officials expressed an interest in the development of a comprehensive disaster plan when initially interviewed after the explosion, one year later no such plan had materialized" (p. 176).

Disaster research conducted by the DRC has impacted the continued evolution of civil defense and the development of emergency management. Tierney (2007) outlines DRC's impact to the discipline, highlight contributions to fieldwork and its examination of individuals and organization effected by disaster. Additionally, DRC researchers would train and develop graduate students, creating a pipeline additional research and academic faculty supporting later research on disasters and hazards.

Hazards Research: From Sociology to Interdisciplinary Studies

Natural hazards research was a logical outgrowth of disaster research. 'Disaster' had no accepted scholarly definition and was viewed by some to include natural hazards. While the focus of the research conducted by the DRC revolved around the examination of human and organization behavior postdisaster, disaster researchers gradually began to examine other aspects that spanned to include the entirety of the hazards cycle (Tierney, 2007). As the focus of disaster research began to evolve, so did the definition of disaster. The definition of disaster is often left to an individual researcher who draws on the fields they themselves represent. For example, a researcher who focuses on behavioral or psychological impacts of a disaster likely has a different definition than a researcher who focuses on the physical or geological impacts.

In early research, the "agent" causing the disaster was relegated to the background, while the outcome of the event and its effects on society (disruption to social order) was given center stage (Killian, 1954). More than "three dozen" differing yet similar definitions are recorded by Perry (2007). He gives special credence to the interdisciplinary "Hazards-Disaster Tradition," which gained prevalence in 1960s based on Gilbert White's research of natural disasters.

White, who, like Quarantelli, received his doctorate from University of Chicago, was a geographer who studied hazards in the context of societal adaptations to natural hazards. His

doctoral dissertation *Human Adjustments to Floods* (White, 1945) had a profound impact on the research of natural hazards and revolutionized the way in which hazard and risks are viewed (Montz & Tobin, 2011; Macdonald, Chester, Sangster, Todd, & Hooke, 2012). Montz and Tobin state that his "landmark" work "set in motion the new era of hazards research focused specifically on solving societal problems" (p. 1). White's emphasis on practical solutions would hasten the interdisciplinary hazards research field's transition into applied research. Later White initiated the National Science Foundation (NSF) assessments on natural hazards and establish the Natural Hazards Center at the University of Colorado in 1976 (Tierney, 2007). The Natural Hazards Research Center has given disaster researchers a forum for spanning across disciplinary silos (Drabek, 2007). This helps researchers working on parallel or related research questions to integrate the efforts of others including practitioners, public and private interests, and policy makers in applying their scientific research (White & Haas, 1975).

Several academic disciplines have long been involved in the examination disasters with some having been engaged for more than 70 years. Disaster research became a recognized specialty in the 1950s (Kreps, 1984; Oliver-Smith, 1999; Tierney, 1993a). Initial efforts within the developing field were discipline specific with a research focus, methodology and framework specific to the discipline conducting the research. Quarantelli (1994) points out that disaster researchers brought with them their own disciplinary perspectives from sociology, psychology, geography, public administration, and anthropology. Alexander (1997), reflecting on the changes to the body of knowledge for disaster studies, suggests that "the field has benefited from the tension of opposites created by these dualities, but that the development has been held back by the contradictions that they imply" (p. 299).

McEntire (2004) counts a growing number of disciplines involved in disaster studies during the past 50 years (see Appendix A). He describes the view of 15 separate disciplines, each with a different view of vulnerability and resulting recommendations. Alexander (1997) goes on to note the involvement of as many as 30 different academic disciplines to have conducted some form of research in the field. While disaster research has been approached from a great number of disciplines, early research and studies primarily came from a sociological perspective but would later expand to other disciplines as well (Quarantelli, 1994; Stallings, 2003). Yet the field's assorted and sundry disciplinary lineage contributes to contemporary disaster research's complexity and variance in perspective. Arguably, contemporary disaster research has been classified as largely interdisciplinary, defined by the National Research Council (NRC), Committee on Disaster Research in the Social Sciences (2006) as follows:

> Interdisciplinary research (IDR) is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more discipline or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or field of research practice. (p. 182)

Klein (1990) and the NRC, in the report on Hazards and Disasters: Understanding Human Dimensions (2006) assert that contemporary disaster research is not interdisciplinary but instead multidisciplinary, described by the NRC (2005) as research that "involves two or more disciplines, each making a separate contribution to the overall study" (p. 181). In other words, disaster research does less disciplinary boundary spanning, and instead represents several established research traditions operating beside one another. Quarantelli (2009) supports this view for some of the early research conducted by the Disaster Research Group. However, the

"multidisciplinary" approach of early research might be better described as "sociology plus." Funding support from the Ford Foundation, National Institute of Mental Health, Department of Health and the Federal Civil Defense Administration may have lent a multidisciplinary emphasis at the outset of Committee on Disaster Research in the Social Sciences research, but the day-to-day management of the organization and research was dominated by a single disciple. Quarantelli (1994) remarks, of the "19 major publications produced by the committee, 13 were authored or coauthored by sociologists, and the three others by anthropologists" (p. 27). These early studies deepened the connection between disaster research and sociology.

Taking Stock of Knowledge and Gaps

Distinct from earlier research studies was the publication of *Man and Society in Disaster* by Baker and Chapman in 1962. The book served to further research efforts by examining some of the first studies undertaken by NAS, the DRG as well as those that were completed by USSBS during World War II. This work was significant for the time by integrating the efforts of selected specialists to "juxtapose disaster research studies with topics like mental health, family and the aged" (Drabek, 1986, p. 2). This work helped served the purpose of chronicling earlier research efforts and to once again demonstrate the validity and focus of early research efforts.

Berelson and Steiner, a behavioral scientist and a psychologist published *Human Behavior: An Inventory of Scientific Findings* (1964) as a next step in the inventory of scientific knowledge for human behavior. The research, while not specifically focused on disaster research, was substantial in the social sciences and would serve to frame the behaviors observed into defined categories covering "the major aspects of human behavior to which scientific study has been devoted" (p. 9). These categories served to divide the chapters into distinct categories

as follows: "The individual, the family, face to face relations-in small groups, organizations, institutions, strata (social characteristics in common), publics, society, and culture" (pp. 9–10).

This organizational concept would later serve as the basis for the categorization of behaviors for disaster research purposes for Mileti, Drabek, and Haas. The inventory helped to the give a roadmap to how the many disciplines involved in disaster research fit together, and increased the prevalence of "anthropology, psychology, archeology, technical linguistics, and most of physical anthropology; Plus, behavioral parts of economics, political science and law" (p. 11) in the field. Warshay (1965) described how this framework would help to organize the massive findings of the disaster research field in the postwar years.

Drabek (1986) notes the significance of Barton (1969) in *Communities in Disaster: A Sociological Analysis of Collective Stress Situations* in its contribution to further the work of codifying the efforts of organized findings. Barton "carefully constructed several interrelated networks of hypotheses that could direct subsequent field work" (Drabek, 1986, p. 2). Gillespie (1988) would likewise indicate Barton's work to be significant in the idea of collective stress as a "new way of seeing old things" (p. 346). Dynes admired Barton's work for its contribution of a classification system to "bring disaster research into a more inclusive typology reflecting social impact" (Quarantelli, 2005 p. 219).

Dynes built on Barton's work in *Organized Behavior in Disaster* (1970), building an inventory of findings from DRC studies as well as the expanded work of others. Britton (1988) argues that this work, by consolidating findings that had previously lacked a unifying them, "has played a central role in bringing about the acknowledgement and acceptance of disaster studies as a legitimate area of sociological concern and as a valuable body of knowledge" (p. 365). This effort demonstrates the shift in research away for the individual toward organizational response

using "analytic typologies that highlighted important differences among the range of organizations responding to disaster events" (Drabek, 1986 p. 3). This book became a foundation for this field of research, it significance marked by the substantial number of citations ascribed to the work, the typology used to organize the studies as well as expanded number of studies and disciplines involved (Britton, 1988).

Human Systems in Extreme Environments (Mileti, Drabek, & Haas, 1975) provided an updated literature review, uniquely organized in a "knowledge matrix." In developing the matrix, the authors chose to organize findings according to the social system affected (e.g., an individual, group, organization, community, society and international community), as well as the time point when the event was observed. This temporal dimension built upon previous work defining disaster phases, including research of Carr (1932), Powell (1954), Stoddard (1968), and Dynes (1970). The six phases included in the matrix were preparedness/adjustment; warning; preimpact early actions; postimpact short-term actions; relief or restoration; and reconstruction. Overlaid with the six structural aspects of the social systems, Mileti, Drabek, and Haas's matrix had 36 cells in total.

The matrix revealed that the body knowledge focused primarily on the individual, followed by the community, organization, group and then societal (Wenger, 1977). In terms of temporal reference, most of the findings were focused on the immediate postimpact period, followed by the preparedness/adjustment and then the warning stage. As Wenger suggested, the "knowledge matrix" was perhaps most valuable in terms of revealing gaps in knowledge and research conducted.

Drabek (1986) would later publish *Human System Responses to Disaster: An Inventory to Sociological Findings* as a follow-on. Drabek developed a research inventory to align research to

dominant professional standards. The National Governors' Association (NGA) *1978 Emergency Preparedness Project Final* report (1979a) emergency management phases that Drabek used in his matrix had gained increased importance in the professional practice of emergency management, and were later adopted by FEMA.

Drabek's inventory incorporated the same structural dimensions that had been used by Mileti, Drabek, and Haas in 1975 (individual, group, organizational, community, society and international). The inventory system (see Appendix B), divides the chapters of analysis into discrete processes as part of the emergency management cycle (mitigation, preparedness, response and recovery) and the eight further subdivisions (planning, warning, evacuation, emergency, restoration, reconstruction, perceptions and adjustment). The methodology used in Drabek's analysis would prove to be of value to researchers and practitioners alike. By aligning of each phase of the emergency management cycle according to the structural dimensions impacted, Drabek provides an easy-to-understand and consistent methodology, to assess areas of strength or weakness that had been examined in previous efforts.

These new research frameworks would gain prominence in the 1980s. As outlined in Section I, a series of catastrophic natural disasters and the difficulty in coordinating response and recovery actions at the state and federal levels (NGA 1979b) lead to FEMA's creation. The latter portion of the Carter administration witnessed emergencies of new complexity and scale, including Three Mile Island in 1979 and Mount Saint Helens in 1980. These events would influence the direction of research in the following years. In response to the Three Mile Island incident, evacuation behavior and planning in the face of a technological disaster became a popular subject for study (Cutter & Barnes, 1982; Houts, Lindell, Hu, Cleary, Tokuhata, & Flynn, 1984; Zeigler, Brunn, & Johnson, 1981). Mount Saint Helens would drive greater

research concerning stress reactions (Adams & Adams, 1984) and the health implications of ash (Buist, Johnson, Vollmer, Sexton, & Kanarek, 1984). It also provided hazards researchers the ability to document volumes in response to volcanic eruption seldom experienced.

Emergency management research gained newfound attention in 1983 as a result of the efforts by the International City/County Management Association, FEMA's National Emergency Training Center (NETC) and several scholars from public administration academic programs (Comfort, Waugh and Cigler, 2012) to "form a professional development program for young scholars in public administration" (p. 540). Waugh (2005) describes this as "watershed" for public administration research in emergency management in it having expanded the extent of the community of public administration researchers. The 1984 program received more than 85 nominations from National Association of Schools of Public Affairs and Administration (NASPAA) member universities from across the nation. The 34 fellows selected to participate gained an introduction to the field of emergency management from officials from FEMA as well as scholars including William J. Petak, Joanne Nigg, Allen Settle, Robert Behn, Al Mushkatel, Peter May, and Tomas Drabek (Comfort et al., 2012). While FEMA dropped sponsorship of the project after its inaugural year, it helped develop up and coming scholars who would later teach and conduct research in emergency management (Comfort et al., 2012; Waugh, 2005). In the late 1990s, FEMA would again form a Higher Education Initiative with a stated purpose to "encourage and support the inclusion of emergency management–related education in colleges and universities across the United States" (Federal Emergency Management Agency, 1999).

Shifting Research Interests and Emerging 21st-Century Threats

During the 1990s, disaster research grew in diversity, corresponding to a broadening view of hazards and developing interests within hazards/disaster research. In *Future Disasters and*

Planning for them: The effects of Current Social Change Trends, Quarantelli (1992) contemplates 21st-century changes to the field and forecasts large-scale trends likely to impact the field as a result of emergent threats. In an increasingly industrialized world with a "quickening of the urbanization process" (p. 2), Quarantelli discusses the role of emerging technologies, environmental changes, as well as changes to social processes in terms of structure, rights of citizenship, participation in polity, justice and adequacy of welfare provisions, on disasters. He outlines that the "dynamics" of disasters and their broader effects on social trends will require greater consideration for future activities regarding disaster planning.

Quarantelli (1992) notes the increase in novel risks emerging from contemporary trends to include; population growth increases risk due to the dense building structures of cities; urban growth leading to the increased need for housing in areas with increased natural disaster risk, such as riverine, marsh and swamp areas. He also provides that demographic shifts are likely to result in already vulnerable populations to become even more at-risk. For example, the increased aging population and their concentrations in natural disaster prone areas, such as Florida. Changes in lifestyle, like increased vacationing in disaster-prone areas, will also influence the increase in risk and disaster outcomes. Quarantelli underscores the disproportionate impact of disasters on poor and vulnerable groups, such as migrants.

Research conducted during the 1990s paralleled Quarantelli's findings, as well as reflected disaster events of the period. Tierney (1993b) would examine the civil unrest of the 1992 Los Angeles riots, looking at causal factors as well as resulting impact on the community. She indicates that while the violence may be similar to what had been examined previously, that the U. S. may be in a transition to a more "complex" form of unrest due to the demographic shifts in population, immigration and the declining environment of our cities. She also would

examine a variety of other impacts of the riots (Tierney & Reshaur, 1994), such as the patterns and distribution of damage.

Earthquakes also figured prominently in 1990s research. Tierney and Anderson (1990) examined the risk perception of emergency managers in the public and private sectors (chemical industries) to review failures and spills and the potential of an event with an earthquake serving as the agent of causation. Citing previous earthquakes in California, Whittier Narrows, 1987 and Loma Prieta, 1989, the significant size of Los Angeles and the volume of hazard materials stored and manufactured locally, the research underscored the need for mitigation and disaster preparedness efforts. She also explored models for earthquake casualty estimation (Tierney, 1990) and explored the social aspects of the Northridge earthquake of 1994 (Tierney, 1995a), concluding that

> earthquake-related losses are in large measure the result of social processes and activities—such as land use and development patterns, building practices and code adoption and enforcement, and individual, organizational, and governmental choices regarding hazard mitigation and emergency preparedness—that affect the extent to which people and property are placed at risk. (p. 10)

In the wake of Hurricane Andrew in 1992, scholars studied the impact of a disaster of regional significance. Peacock, Morrow, and Gladwin, (1997) edited a collection of works that would provide insights into topics such as race and ethnicity, social integration as well as topics related to public policy and administration. Numerous other examinations would take place concerning that of stress post incident for school age children, (Garrison et al., 1995) (La Greca, Silverman, Vernberg, & Prinstein, 1996). Observations and recommendations from these studies

found that stress events following a disaster might be more strongly associated with PTSD than the actual event itself and that postdisaster planning should account for this.

The 1990s also saw the emergence of business impact studies. Tierney, (1995b) builds on earlier inventories of research (Dynes, 1970; Mileti et al., 1975), explaining that disaster research has expanded in focus of initial efforts on post impact, to include activities on hazard mitigation, preparedness, response and recovery. In her review for the topic of disaster impacts on business, she indicates that very few studies had taken place to develop "empirical" research in the area. While some research had been conducted on the periphery of how businesses might be impacted, much of what had been accomplished was narrowly focused. Some exceptions include Durkin's (1984) study on small business impacted by the 1983 earthquake in Coalinga, California, which examined the factors that would help facilitate or inhibit recovery. Another study by Kroll, Landis, Shen, and Stryker (1991), explored the impacts of the Loma Prieta earthquake on businesses in Oakland and Santa Cruz. The two studies established that disruption could result from simple damage to the business facility itself, as well as damage to local infrastructure, inventories, or to customer and employee access. Researchers note that businesses in certain trades and service industries might in some cases benefit from a disaster.

Tierney's (1995b) study examined business disruption from two natural disasters: the 1993 Midwest floods and the 1994 Northridge earthquake. While the disasters were different, there were several comparable findings in both instances. Both disasters resulted in similar impacts when it came to recovery and reopening. Both cited the lack of "lifeline" services (electricity, water, sewer) as inhibiting the reopening of the business. Hazard mitigation and preparedness programs had a tendency to focus on the direct physical damage to a building or a business, these programs did not take account some of the disruptions or damage that could

occur elsewhere yet have a significant impact on business operations. Another commonality between the two events was the lack of reliance on Federal disaster loan programs or other sources of recovery assistance. Instead, business owners tended to rely on personal savings for recovery, in some instances preventing the reinvestment needed for a business to invest itself for continued growth and viability. Additionally, the study found that small businesses were far more adversely impacted in the wake of a disaster.

Beyond Tierney's study of 94, Tierney and Dahlhamer (1995) and then Dallhammer and Tierney (1996) would explore preparedness and recovery activities as they related to businesses and disaster. Supporting earlier studies, they examined "lifeline dependency" on services required to support business to determine the relative importance of these services. Survey data indicated electric and then phone to be most significant (Tierney & Dalhammer, 1995, p. 11). This research would also highlight the additional contributions of Nigg (1995, 1996), who examined the differences in dependencies based on business sectors. Nigg's research noted a universal dependency on power, but vast differences in needs for water, sewage and phone service based on the sector and size of business. The research indicated that collectively businesses that participated in preparedness efforts preincident, were better off postimpact than those which had not prepared.

The Shift From Research Into Education

The first textbook on emergency management was distributed in 1991 by the International City Management Association (ICMA). *Emergency Management: Principles and Practice for Local Government* (Drabek & Hoetmer, 1991) was developed to serve as "the first comprehensive text in its field (p. xiii). In the forward of the text, the 1983 initiative between FEMA and the NASPAA is described with a conference participant noting the need for "an

integrated research base and body of knowledge (in emergency management relevant to public administration" (p. xiii). According to the text, FEMA created a national review panel to develop and deliver a textbook to form the core of emergency management education and to serve as guidance for local administrators.

Consistent with the tenets of the NGA's report of 1979 (1979b) *Comprehensive Emergency Management: A Governor's Guide*, the textbook delineates emergency management consistent with the concept of comprehensive emergency management (CEM) which utilized the four phases of emergency management (mitigation, preparedness, response, and recovery). Nine of the 15 textbook authors are accomplished scholars, including Drabek, Anderson, Gillespie, Godschalk, Kreps, Perry, Pine, Rubin and Scanlon. The contributors are practitioners within the field of emergency management, each with an extensive amount of experience within the area they authored.

The creation of the FEMA Higher Education Program marked another significant step forward in transitioning research into practical application in establishing academic programs would be (Cwiak, 2011; Marks, 2005). Founded in 1994 by Kay Goss, then the Associate FEMA Director in charge of National Preparedness, Training and Exercises, the program was led by Dr.Wayne Blanchard. Blanchard (2008) provides a synopsis for the initial development of the program in terms of the context for emergency management higher education in the U.S. as well as its goals and mission. In viewing the problems faced at the time of program development in 1994, Blanchard notes that "problems faced today are much more complex and different from those faced even a generation ago." He continues,

> Growth and changes in this country and in the international political environment have created new threats and challenges for our society. Life is getting more complicated, with

new technologies and the unfamiliar vulnerabilities and threats they bring, and aging infrastructure. Population growth and development has placed more people in harm's way.

The movement of people into the Sunshine States place them at greater risk to such hazards as earthquakes, hurricanes, wildfires, and tornadoes. With the planet becoming "flatter" and more populated, threats of communicable disease spread, including pandemics become more probable and conceivably more dangerous. The most recent rise in international terrorism makes life more dangerous. (p. 4)

Blanchard articulates the need for "enhancement" of the U.S. national emergency management system. Past practitioners have not been college educated and as a consequence developed their knowledge on the job. Too often, positions were obtained without emergency management competencies or fundamentals. Emergency management employment was frequently part-time and practitioners were not valued as professionals. Blanchard further underscores that many within the occupation are baby boomers coming up on retirement with the implication of losing those with practical experience and needing an educated workforce for the future.

The need for emergency management education within the field that is becoming increasingly more professionalized is further developed by Thomas and Mileti (2003) and Wilson and Oyola-Yemaiel (2011). In a 2003 workshop conducted by the Natural Hazards Center in partnership with the FEMA Higher Education Project, "fifty-five leaders" from the hazards community met to address educational needs to "nurture the emerging discipline of emergency/hazards management and to promote and support the profession and professionalization" (Thomas & Mileti, 2003, p. 3). The outcomes from workshop working

groups addressed the core skills of emergency/hazards managers (at both the graduate and undergraduate level), the core knowledge requirements, theory, research and technology needs. On Curriculum, the workshop recommended that "each program should work with state-level agencies to develop curriculum" (p. 12). The work of the FEMA Higher Education Project would be highlighted as part of the discussion to showcase a variety of approaches taken by programs for emergency management curriculum development.

One of the most recent accomplishments of the higher education program according to Cwiak, has been the creation of the *Curriculum Outcomes* (Jaffin et al., 2011). The outcomes, are the cumulative product of the FEMA higher education program's previous surveys (Cwiak, 2008, 2009), the surveys of others as well as the *Principles of Emergency Management* (Blanchard et al., 2007). According to Cwiak (2011), the study regarding knowledge, skills and abilities (KSAs; 2008) "referred to as competencies by many" (2011, p. 4) was juxtaposed against the competencies deemed important for emergency management professionals (2009). Cwiak (2011) compares the two studies (Appendix C). The results showed "a fair amount of agreement in the emergency management higher education community of what emergency management professionals needed to know and be able to do" (p. 4). The colored coded areas demonstrate the similarities as a shared view between what was examined as a competency versus what was surveyed as a KSA.

The shared view would serve as the basis for follow-on efforts of the FEMA higher education community as it formed a group to which would develop *Curriculum Outcomes* (2011) as a list of "outcomes regarding what a person holding an undergraduate degree in emergency management should know" (Cwiak, 2011 p. 5). While not every higher education program will deal with all of the topics contained in the outcomes document, it is provided that the "hallmark"

of emergency management degree programs will be the range of areas they cover. Of interest in examining the document is that homeland security education is not developed as an area of focus for higher education.

Summary of Role of Research in HSEM Education

Disaster research, starting with post-WWII NORC studies, emerged to address federal government concerns about wartime crisis behavior. Funded by the military, early research had a very applied basis in researching human behavior immediately after an emergency and during the post emergency period (Fritz & Marks, 1954). Similar research would be conducted through the 1950s. As research into emergent behavior became more thoroughly understood and common myths debunked, other research focuses were undertaken. Quarantelli (1997) noted that in the "pioneering days of disaster research it was evident that the most effective and efficient planning and managing measures for responding during crises would have to be primarily carried out by organizations" (p. 95). Subsequently, great research focus was then placed upon organizations post disaster. These research efforts would lead to observations and recommendations for organizations and those who managed them to include civil disaster directors and those looked to provide for these capabilities post disaster (fire and police departments).

Escalating Cold War tensions in1960s increased funding for disaster research. Research sponsors broadened beyond the military to include both public and private sector interests. In 1963 the Disaster Research Center (DRC) was established, providing a number of key capabilities for the growing discipline. The DRC built upon past research and broadened the growing body of disaster research including examinations of organizations pre- and postevent, conduct follow up studies based on previous studies and to notably, provide observations and recommendations supporting effective emergency operations and civil defense planners.

The continued efforts and funding for the DRC built a capacity to educate, train and provide for future research. With the funding and increased research in disasters, the fieldwork provided graduate students an opportunity to gain relevant experience in the field. This would lead to publications and other opportunities for interdisciplinary and multidisciplinary efforts. These opportunities generated a diverse body of knowledge, and fuel scientific inquiry far beyond the research originally conducted on human behavior. Disciplines such as geography, anthropology, political science and public administration to include emergency management and homeland security would grow in turn to research and make recommendations on an ever increasingly more complex environment we live in.

Homeland Security and Emergency Management Education

Homeland security and emergency management occupations as professions have grown in the last few decades, and matured substantially along the way (McEntire, 2004; Neal, 2005; Waugh & Sadiq, 2011). From the WWII origins of civil defense, to dual-use, to the all-hazards approach to emergency management and most recently to homeland security, the vocabulary and profession itself have gone through many iterations. As these HSEM have become more professionalized, the importance of education as part of that process has grown in importance (Blanchard, 2008; Neal, 2000; Thomas & Mileti, 2003). A number of complimentary efforts are developed within this section to outline the activities which have taken place to define and develop curriculum, a body of knowledge as well as other initiatives to assist in shaping the education needs of homeland security and emergency management practitioners.

Roberts (2013) suggests that, even while FEMA was at a low point in its existence in the early 1990s, emergency management professionalization was on the rise. New journals, associations, and higher education degree programs developed to help define the emerging

profession. Roberts also expresses that the end of Cold War forced civil defense organizations w to become the new emergency management organizations. The roots for several current day homeland security and emergency management organizations is civil defense. For example,

> The National Emergency Management Association (NEMA) began as a civil defense organization only to later reduce its role in civil defense and focus on natural hazards. Likewise, the International Association of Emergency Managers (IAEM) started as the U.S. Civil Defense Council, and later became the National Coordinating Council on Emergency Management and then was renamed as IAEM. The American Civil Defense Association has also refashioned itself as a homeland security and counterterrorism defense association. (p. 93)

Woodbury (2005) contends that emergency management has been expanding in both scope and pace outdistancing the educational opportunities available. His reflects that 1970s and 1980s civil defense efforts did not require the "educational enhancements" necessitated by 21st-century threats. Contemporary emergency management places greater responsibilities on emergency managers, more significant disasters and increased coordination between federal, state and local officials. As such, more expertise is demanded of the profession (Wilson & Oyola-Yemaiel, 2001). Practitioners have traditionally come from backgrounds including the military, police, fire, or other closely associated fields (Wilson & Oyola-Yemaiel, 2002). Emergency managers often did not have a university degree and if they did, it was not in hazards or emergency management or a related field Thomas and Mileti (2003). Many traditionally entered emergency management as a third or fourth career and were expected to learn requisite skills and knowledge on the job. Now new academic programs emerged to provide students the education required to staff a growing profession (Roberts, 2013). The continued need and

development of educational programs has accelerated thanks to the rise of disasters, their impact on victims and the economic losses sustained as well as the push by FEMA, and the pressure on emergency management organizations to meet the growing needs of the profession (Neal, 2000). Demographic shifts in population distribution as previously noted helped to underscore the need for emergency management education as well. Additionally, Darlington (1999) advances that changes in technology need to be formally explored, for both integration into emergency management and education as well.

Emergency Management Education

The Emergency Administration and Disaster Planning (EADP) degree program at the University of North Texas was one of the first degree programs established (Neal, 2000; Phillips, 2003). Both Phillips and Neal note that the EADP curriculum was developed around the concept of Comprehensive Emergency Management outlined in the NGA report of 1979 (NGA, 1979b), acknowledging the phases of disaster management. Neal, an early faculty member in the program, describes patterning the program from CEM and the phases (mitigation, preparedness, response and recovery). The EADP program evolved to respond to emerging trends within the field with new courses. As Neal describes, with the end of the Cold War, the program would delete its civil defense course, and add courses in emerging topics such as computer in emergency management, business continuity and the role of the DoD in emergency management. Noted by Wilson and Oyola-Yemaiel, (2002) enrollment within the program was initially composed of fire, paramedic and police practitioners. Over time Neal notes that traditional students would take a more prominent place within program.

In the mid-1990s, FEMA established the FEMA Higher Education Program (Blanchard, 2008; Cwiak, 2011; Oyola-Yemaiel & Wilson, 2005). Blanchard (2008) noted that

professionalism needs within the emergency management domain, as a historical context for the development of the higher education program. He observed that many emergency management practitioners were not college educated, and the professional knowledge base was experiential. Moreover, new hires in emergency management often lacked the proper competencies and fundamentals. He noted that as disaster losses in the U.S. were growing, the role of emergency management to be more complicated than in the past. The mission of the higher education program would be to "serve as the Nation's leading focal-point for emergency management higher education, foster the professionalization of the field via education efforts, and contribute to a more resilient nation by creating a cadre of professional emergency managers" (p. 5).

When the FEMA higher education program was established in 1994 (Goss, 2011), Blanchard (2008) submits that there was one Bachelor's level program and three collegiate certificate programs in emergency management throughout the U.S. By 2008, the number of programs exploded to more than 150 The *FEMA Emergency Management Higher Education Program Description 2014* cites more than 250 programs in existence (Higher Education Program, 2014), demonstrating continued growth for emergency management higher education programs nationally. Commenting on the progress of the emergency management professionalization process and increase in higher education opportunities, Thomas and Mileti (2003) state that, "while certainly filling a niche and meeting a need, these programs have emerged in a rather uncoordinated fashion, with little professional or academic consensus on core knowledge of curriculum content" (p. 4).

In a workshop conducted by the Natural Hazards Center and the FEMA Higher Education Program in 2003, "fifty-five leaders" from the hazards community met to address educational needs to "nurture the emerging discipline of emergency/hazards management and to

promote and support the profession and professionalization" (Thomas & Mileti, 2003, p. 3). According to O'Connor (2005), this would be the "first time" that competencies and curricula would address educational needs for the workforce. Workshop participants included researchers, academics as well as practitioners. The outcomes from the workshop working groups addressed a wide range of topics including the core skills of emergency/hazards managers (at both the graduate and undergraduate level), industry core knowledge requirements, theory, research and technology needs. Curriculum needs were also explored, and it was recommended, "each program should work with state-level agencies to develop curriculum" (p. 12). It is of interest to note within the final section of the report findings relating to Homeland Security:

> While not the explicit focus of this workshop, Homeland Security also links directly with emergency/hazards management in both a professional and academic setting. The current direction in the U.S. requires that emergency/hazards management extend beyond traditional boundaries, while at the same time continuing to focus on hazards and loss reduction. The hazards community must promote itself within this context, forming linkages in educational programs as well as professionally. (p. 20)

Blanchard (2005), in his role as director of the FEMA higher education program, continued the workshop's work developing courses and curriculum for higher education programs. The *Top Ten Competencies for Professional Emergency Management* was developed to assist academics in their "designing or maintaining" academic programs, degrees and concentrations. The competencies document, an updated version of a document that Blanchard and Branch (2003) had created during the Natural Hazards workshop, provided a robust set of core competencies which were divided topically and addressed the top 10 things the author would look for in a professional emergency manager.

Cwiak (2011) highlights additional achievements of the FEMA Higher Education Program. One of the most recent accomplishments of the higher education program was the creation of the *Curriculum Outcomes* (Jaffin et al., 2011). The outcomes result from the cumulative efforts of the higher education program's previous surveys (Cwiak, 2008, 2009), the surveys of others as well as the *Principles of Emergency Management* (Blanchard et al., 2007). Cwiak (2011) posits that the examination of knowledge, skills and abilities (KSAs; Cwiak, 2008) "referred to as competencies by many" (2011, p. 4) was juxtaposed against the competencies deemed important for emergency management professionals (Cwiak, 2009). Cwiak's (2011) table (Appendix C) compares the two studies. The results indicate "that there was a fair amount of agreement in the emergency management higher education community of what emergency management professionals needed to know and be able to do" (p. 4). The colored coded areas demonstrate the similarities as a shared view between what was examined as a competency versus what was surveyed as a KSA.

The shared view would serve follow-on efforts of the FEMA higher education community as it formed a group of academics which would develop *Curriculum Outcomes* (2011) as a list of "outcomes regarding what a person holding an undergraduate degree in emergency management should know" (Cwiak, 2011 p. 5). The article acknowledges that not every higher education program will deal with all of the topics contained in the outcomes document, and the "hallmark" of emergency management degree programs is in part range of areas they cover.

Other examinations, conducted separately, but with input from the FEMA higher education program, include a study by the Spiewak (2005) to develop a "Common Body of Knowledge" for the International Association of Emergency Managers (IAEM). Spiewak details

a myriad of difficulties encountered in the study, such as low response rates, lack of consensus regarding knowledge and competencies and vague survey responses. He changed the scope of the survey instrument to more narrowly define input and consequently developed a list of the top 10 competencies with a goal to define a body of knowledge.

O'Connor (2005) examines *Knowledge, Skills and Abilities* (2004) developed by IAEM, Blanchard's core competencies (Blanchard & Branch, 2003) and the results from associate (Beckering, 2004), bachelor (Hoover & Grant, 2004; Peterson, 2004) and graduate (Brown, 2004, 2015) level core functions and competencies sessions from the FEMA higher education conference in 2004. O'Connor argues that while KSAs are a useful tool in defining the standards of what an emergency manager should be able to do or topics that they need to know, that they are not as useful in developing a curriculum. "Such lists are normally either largely based upon convenience sampling or upon literature searches and are thus not generalizable to the appropriate populations of programs" (p. 3). He states that traditional curriculum development follows from defining a basis of educational goals, which a set of instructional courses is then used to address.

In a review of the curriculum requirements for associates, bachelors and master's degree programs resulting from the FEMA higher education 2004 conference, O'Connor found the terms knowledge and skill too broadly defined and their application confusing. He advocated, in turn, for a more precise term—*competency*—to indicate that a learner has achieved a stated performance standard or objective. O'Connor argues that competencies lend themselves to measurement against specific criteria (California State Polytechnic State University, 2005; Morrison, Ross, & Kemp, 2004).

In concluding, O'Connor uses a Delphi and empirical comparison to flag a number of areas where the curriculum requirements previously developed in the noted studies deviated in both a quantitative and qualitative context from the examination in which he undertook. He notes that while there were some areas of agreement in terms of shared importance of a competency in his examination, they were not seen in the previously developed examinations. He concludes that while some differences within the studies are expected, further examination is required to develop an appropriate curricular framework for each degree level.

Homeland Security Education

The concept of homeland security has continued to evolve over the course of the last decade (Reese, 2012) as evidenced by the diverging definitions as developed by Bellavita (2008). This concept dates back to Cold War concerns over national security but has changed in the wake of 9/11 and the rise of radical terrorism. The establishment of the Department of Homeland Security placed a new focus on homeland security, and created the idea of homeland security as a defined discipline "premised on the assumption that public safety disciplines operated too much in isolation from each other" (Bellavita, 2011, p. 2). In the wake of 9/11 institutions of higher education explored the need and to develop courses and programs to meet the educational needs of the emerging discipline (Bellavita, 2011; Rollans & Rowan, 2007; National Research Council, 2005) According to Comiskey (2014), the Center for Homeland Defense and Security (CHDS) called upon U.S. colleges and universities to support this effort. The CHDS was established in 2002 with a mandate to

> educate and prepare a national cadre of local, state, tribal and federal leaders to collaborate across professional disciplines and levels of government to secure the nation's homeland by developing new policies, strategies, and organizational

> arrangements to prevent and respond to future attacks; Begin to define through evidence-based research the emerging discipline of homeland security and the curriculum components of graduate and executive-level homeland security education; and Facilitate the development of a national homeland security education system by using an "open source" model to develop programs, curriculum and educational tools and share these resources with other academic institutions and agencies to expedite their development of homeland security programs. (Center for Homeland Defense and Security, 2011)

CHDS began to deliver a fully accredited 18-month graduate program in January of 2003. In addition to the graduate degree, they also managed a variety of other programs designed to meet their mandate to develop programs, curriculum, educational tools and share these resources with academic institutions and agencies to expedite their development of homeland security programs including the University and Agency Partnership Initiative (UAPI), the Homeland Security Digital Library (HSDL) and the Homeland Security Affairs Journal (Center for Homeland Defense and Security, 2011).

In 2004, the National Research Council formed a Committee on Educational Paradigms for Homeland Security sponsored by DHS's Office of University Program to examine homeland security in higher education (National Research Council, 2005). The committee notes their "realization" that homeland security lacks a commonly agreed upon definition. To advance workshop objectives, they adopted a working definition, describing homeland security as "any area of inquiry whose improved understanding could make U.S. peoples safer from extreme, unanticipated threats" (p. 3), but also noted two differing views to develop in further discussion. One view advocated that homeland security should focus on man-made threats, while the other extended homeland security to address technological and natural, as well as man-made, threats.

In the discussion, Wayne Blanchard from FEMA's higher education program would point out that technological and natural threats were already well defined academically within emergency management curricula.

According to the NRC report, not a single workshop participant or committee member endorsed the concept of an undergraduate program specifically focused on "homeland security." Given the lack of an established definition of homeland security, it was doubtful employers would even understand what a degree of this kind might represent. The report did not advise on a core for a graduate program. Instead it recommended the use of a graduate certificate program in lieu of a degree due to the specificity of the material and that these certificates are "typically geared" to meet the needs of employers.

Smith (2005) attempted to establish a conceptual definition of homeland security according to what was being taught at the time. Using grounded analysis, he examines both graduate and undergraduate syllabi sampling course titles, descriptions and content to develop categories in which homeland security courses tended to focus. Smith used a web-based survey to collect syllabi from a variety of sources including online courses and courses listed on the FEMA higher education website.

Using content analysis, Smith broke down the course list according to name, focus area and then common concepts. A descriptive summary details courses in: homeland security, emergency management or preparedness, terrorism and national security, as well as military-oriented courses and technical or specialized courses. Smith's (2005) content analysis revealed that, "despite the descriptor of homeland security, many courses still retain a familiar focus on core functions in public affairs" (p. 243). He further elaborates that he was "surprised" to find that some of the more technical aspects he expected to find in homeland security curricula, such

as weapons of mass destruction and intelligence activity, were lacking. While the content analysis of the samples was useful in revealing concepts, themes and topics, it proved difficult to "accurately construct an inclusive definition" (p. 244). A clear set of core competencies that should be included in a curriculum did not emerge from Smith's work. He believed that further effort should be made to define the role of homeland security courses and the coverage they provide.

Bellavita (2008) views homeland security as an ecosystem:

> As the homeland security ecosystem continues to evolve and interact with its environment, one can expect variation on particular aspects of the definitions, selection by other of the pieces of the definition that confer the most survival value, and reproduction elsewhere in the ecosystem of particular homeland security definitions. (p. 1)

He draws attention to seven separate definitions:

1. *Terrorism*. Homeland security is a concerted national effort by federal, state and local governments, by the private sector, and by individuals to prevent terrorist attacks within the United States, reduce America's vulnerability to terrorism, and minimize the damage and recover from attacks that do occur.

2. *All Hazards.* Homeland security is a concerted national effort to prevent and disrupt terrorist attacks, protect against man-made and natural hazards, and respond to and recover from incidents that do occur.

3. *Terrorism and Catastrophes.* Homeland security is what the Department of Homeland Security—supported by other federal agencies—does to prevent, respond to, and recover from terrorist and catastrophic events that affect the security of the United States.

4. *Jurisdictional Hazards.* Homeland security means something different in each jurisdiction. It is a locally-directed effort to prevent and prepare for incidents most likely to threaten the safety and security of its citizens.

5. *Meta Hazards.* Homeland security is a national effort to prevent or mitigate any social trend or threat that can disrupt the long-term stability of the American way of life.

6. *National Security.* Homeland security is an element of national security that works with the other instruments of national power to protect the sovereignty, territory, domestic population, and critical infrastructure of the United States against threats and aggression.

7. *Security Über Alles.* Homeland security is a symbol used to justify government efforts to curtail civil liberties. (Bellavita, 2008, p. 1)

Bellavita (2008) provides that without an "explicit" definition, it remains open to often contentious discourse as to what homeland security should or should not emphasize. He believes that the "truth" about homeland security may correspond to one's view of it.

Bellavita and Gordon (2006) suggested that homeland security to be in a "preparadigm" phase at that point in time. They suggest that unlike established academic disciplines there is no general consensus on what the topics that homeland security should treat. A review of existing subject themes from textbooks, academic programs and agencies provided a set of themes. It included 51 separate subjects from a variety of subject areas specific to homeland security, with apparent theme overlap to include emergency management. Despite the lack of consensus as to what homeland security actually is, they still note that "homeland security as an academic field of study is alive with new problems to explore" (p. 5).

Bellavita and Gordon (2006) describe the Naval Postgraduate School (NPS) graduate program that is housed at CHDS. They detail several assumptions used in developing their graduate program construct, including the mission of the sponsor (DHS), the nature of students (as leaders), and what homeland security itself constitutes. They detail the introductory course for the program and its use in providing students a basis from which they can then delve into more advanced course work. With the preparadigm status of the discipline, Bellavita and Gordon believe it too early at this time to establish a defined set of standards regarding the topics to teach.

The following year, Corthell, Ries, Brown, Kahan, and Maloney (2007) of the Homeland Security Institute examined professional core competencies for homeland security leaders and supervisors in a white paper developed for the DHS Chief Learning Office. The paper used a three-tiered process to analyze the knowledge, skills and abilities (KSA) needed by DHS employees serving in first line to executive level positions. Tier one core competencies were drawn from Office of Personnel and Management (OPM) documents. Tier II competencies were extracted from DHS job descriptions specific to DHS, while Tier III competencies would be drawn from other sources including current literature and academic programs.

According to Corthell et al. (2007), the white paper was intended as a starting point for interagency discussion on learning and professional development activities. While no specific recommendations about DHS needs are made in the paper, it does outline the need to establish partnerships with public and private partnerships.

Winegar (2008) distills the educational themes of Bellavita and Gordon (2008) down to a set of 30 separate topics for a meta-analysis of existing programs content. In pooling the differing surveys that were used in the analysis, he notes the "interconnectedness" of both homeland security and emergency management professions. In noting this overlap, he underscores the need to use data from both emergency management as well as homeland security surveys within his examination. The academic programs reviewed were self-identified as homeland security programs, although content preference often reflected the roots of the program (i.e., emergency management, criminal justice, or the social sciences). The rubric compared the content provided in approximately 150 separate textbooks with an accompanying analysis from the most common to the least common subject.

A series of surveys outlined within the work of Winegar (2008), furthers the research examination in having a defined group of homeland security professionals, a group of emergency managers and finally a group of students individually rank the most to the least important topic from the rubric. From the resulting meta-analysis, it was demonstrated that there were general areas of agreement although the background of the individual and their roots, similar to the program roots, impacted areas of importance placed on various topics. Winegar (2008) advocates for a baseline set of standards for homeland security academic programs, "whether for the sake of the market, the discipline, or the academic standard" (p. 53).

Church (2010) maintains the need for a unity of effort and integration for homeland defense and homeland security efforts regarding the range of activities be it prevention or response to natural disasters or terrorism to be a key concept. She stresses the importance of the unity of effort as it relates to meeting the challenges and collaborations in developing interdisciplinary education. According to Church (2010), "The key to successful prevention, protection, response, and recovery depends upon the relationships of all the 'enterprise' stakeholders—military, civilian, nongovernment organizations, and the private sector—across all levels of government" (p. 20). In citing the 2008 National Defense Strategy, the accompanying doctrine and the mission for DoD and DHS interagency coordination, she demonstrates that beyond shared response for events such as Hurricane Katrina that defense support to civil authorities should be the rule and not the exception. Church (2010) underscores that the

> homeland defense and homeland security community could benefit from similar shared learning opportunities for military personnel and national/homeland security professionals. Bringing together personnel from the variety of homeland defense and homeland security stakeholders (fire, law enforcement, military, emergency management,

public health, etc.) broadens the perspective of the individual beyond their particular discipline to a homeland defense and national security professional viewpoint. The interagency collaboration; relationship building; information sharing; joint planning, exercising, and execution benefits contribute to (and could enhance) unity of effort in homeland operations. (p. 24)

Ramsay, Cutrer, and Raffel, (2010) examine the use of an outcomes-based curriculum development process to create a homeland security undergraduate program. Their examination, emphasizes the use of outcomes based education (OBE) to create specific, measurable standards within an integrated curriculum framework. This framework is applied across the breadth of the curriculum as competencies, the transferable "behaviors, skills and knowledge" valued by employers of their employees.

Ramsay et al. (2010) used the Dephi process to perform an evaluation with eight subject matter experts on two separate tasks: establishing a consensus on a set of core academic areas; and developing consensus on learning outcomes in these academic areas. Similar to Winegar (2008), Ramsay et al. (2010) determined that there was "convergent validity" between their examination and that of Winegar. Several of the course topics which were considered important by those surveyed by Winegar, were similar to that found by Ramsay et al. (i.e., terrorism, emergency management, and strategic planning, to name but a few).

Pelfrey and Kelley (2013) examined a variety of questions related to the homeland security and the overarching goal of national preparedness. They note that, "while there is nothing particularly wrong with proceeding forward into the uncertain future of homeland security education, much of the movement has been without directional evidence and debates as to what direction have generated more heat than light" (p. 1). Pelfrey and Kelley use data

collected from 382 respondents, including graduates of the Homeland Security and Defense program at the Naval Postgraduate School, program faculty and practitioner subject matter experts. The survey combined a number of core tasks and objectives from a variety of sources including the Naval graduate program and CHDS. Careful attention was made not to include training components that were more technical than educational in nature.

Pelfrey and Kelley (2013) surmise that homeland security education is "most appropriate" for practitioners who are in homeland security leadership positions and is not appropriate for those aspiring to be homeland security professionals. They believe the value of homeland security education is derived less from the knowledge it provides, but, in the preparation, it gives students in performing complex cognitive tasks. They suggest that a "cook book" of core courses for a program to be at best aspirational and at worst, misleading and misdirected.

Collier (2013) opposes the perspective laid out by Pelfrey and Kelley (2013). Collier demonstrates that other homeland security academic initiatives, not reviewed in the Pelfrey and Kelley examination, have demonstrated progress on standards and accreditation for undergraduate and graduate level homeland security education. He argues the Pelfrey and Kelley examination placed a too much and emphasis on the public sector and that it might not reflect the larger homeland security community. Finally, Collier admonishes Pelfrey and Kelley for dismissing undergraduate education as being primarily technical and undergrad students incapable of complex thought.

Integrated Homeland Security and Emergency Management Education

Drabek (2007) offers an alternative view in the integration of homeland security and emergency management education programs. Citing the increased professionalization of

emergency management in the past few decades, the explosive growth in educational programs, the attacks of 9/11 and the development of homeland security curricula, he advances several considerations for program integration. Drabek (2007) outlines a number of differences between emergency management and homeland security disciplines. According to Drabek, homeland security focuses specifically on terrorism while emergency management looks at all hazards. In terms of "management paradigm," homeland security favors a top down or command and control approach, as compared to a cooperation and coordination strategy for emergency management. Despite these differences, Drabek believes that one discipline is not necessarily better than the other, and that bridges should be built between the two.

According to Drabek (2007), "Too many faculty I have discussed these issues with, like their counterparts in the practitioner communities, view these matters much too narrowly" (p. 13). With this in mind, he recommends that as part of a process toward better integration, that the "diameter of the straw be increased" for those who both practice and teach emergency management and homeland security. As part of this perspective, he illustrates that future emergency managers and homeland security professionals will need to become better skilled in shifting focus; have the ability to focus on a singular issue, and then pull back to examine the complexity of that issue as it relates to others disciplines in an increasingly more complex environment.

Drabek concludes his narrative on the topic of integration by stating that differing cultural views could "preclude" a simple integration of current and future homeland security and emergency management curricula. Curriculum decisions should be nurtured and promoted, but not prescribed by the agencies who have influence within the domains taught. As with the

evolution of previous professions, it should be anticipated that this process will continue to evolve.

Rollins and Rowan (2007) assert that "the homeland security academic discipline is currently an evolving ungoverned environment of numerous programs purporting to prepare students for various positions of responsibility" (p. 3). In a report undertaken at the request of the Homeland Security and Defense Education Consortium (HSDEC) they gathered "raw data" in the form of all the course titles they could locate from programs teaching "homeland security." The courses were cataloged as Associate, Bachelor, Certificate/Graduate Certificate and individual courses taught within academia. They extracted almost 1800 courses being taught in 227 total programs. Based on this, and what they see as the continued evolution of the homeland security profession, Rollins and Rowan foster the idea that while many in the field argue that they are not at point to attempt to standardize programs and courses, that those within the profession feel it to be the responsibility of the academe to do so. Tremendous diversity is found within the course inventory. Courses include logical homeland security topics such as terrorism, critical infrastructure protection and weapons of mass destruction as well as courses drawn from the emergency management curricula. Emergency management, emergency operations and a hazards seminar are likewise commonly found in other academic disciplines such as criminal justice.

McCreight, (2009), Kiltz (2011, 2009), and Donahue, Cunnion, Balaban, and Sochats, (2010) provide a healthy discourse over a myriad of challenges posed by homeland security and emergency management education. McCreight (2009) develops a number of challenges and concerns regarding the delivery of an educational program within these areas in the absence of "a common benchmark standard at the agency level for collegiate education in these related fields"

(p. 1) as provided by FEMA, DHS or other associated professional organizations. He also describes other challenges within the academy in relation to the quality of the instructors and their operational experience and the practicality of having someone with or without experience teaching aspiring students. McCreight comments that a number of interesting dilemmas remain for homeland security and emergency management educators, asking, "if homeland security and emergency management are cousins, in educational terms, how do we adequately prepare future generations for the profession?" (p. 1).

McCreight (2009) proposed 12 topic areas as those, which should be considered as a basis for undergraduate and graduate homeland security and emergency management education. McCreight's topics (Appendix D) range from homeland security policies and principles, to crisis and emergency management with areas of mitigation, preparedness, response and recovery integrated among the 12 topics. McCreight suggests that academic and practitioner consensus is needed, along with student success rate data, to effect future changes to curriculum and promote the "professionalization" within the fields of homeland security and emergency management.

Kiltz (2009) responds to McCreight (2009), advocating a move beyond the development of students who only develop the prescribed KS's as provided by the government and focus on the broader objectives of higher education in developing leaders and citizens with a sense of civic duty. Donahue et al. (2010) carry the discussion a step further to provide that it is the role of academia and not the government to focus on the thought process. While they believe that McCreight is correct in his assertion that there is a lack of a standard or consensus regarding what should be taught, they submit that he has it backwards, in that it is academia's role "as the developer and delivery agent of new knowledge" to establish learning objectives (p. 10).

Kiltz (2011), similar to Drabek (2007), notes the differing cultures that exist between homeland security and emergency management. Kiltz provides that in meeting these challenges, conflicts need to be resolved between the two fields to ensure a better understanding of each other's educational domains and vocabularies. It is clear that much of what drives the need for integration is the complex nature of practitioner needs in an environment of increasingly more complex requirements within the HSEM enterprise.

Polson, Persyn, and Cupp (2010) provide an overview in the research and codevelopment of graduate program in homeland security between Kansas State University and the U.S. Army Command and General Staff College. Citing McCreight's (2009) concerns regarding the myriad of challenges posed to the academic community, Polson et al. (2010) suggest that future success will depend on the "collective and collaborative" efforts, not only of those in the federal government, but those in research, academic settings as well.

Polson et al. (2010) note that in the backdrop of creating DHS, the priority of the organization understandably was to address the security requirements of the time. While those security considerations may have served as a necessary starting point, DHS's priorities would shift and even add "all hazards" to their lexicon after Hurricane Katrina. This all-hazards approach, Polson et al. suggest, has become a popular descriptor to comprehensive homeland security programs.

Polson et al. (2010) used the Homeland Security/Defense Education Consortium (HSDEC) course content recommendations (Appendix E), in conjunction with the DoD competencies as a basis to help frame core content development. The HSDEC course content recommendations were developed by a panel of 25 recognized homeland security education experts as part of efforts. Using both of these as a guide to drive focus groups and survey data

collection, Polson et al.'s research resulted in a list of 15 common core interdisciplinary areas and a proposed curriculum that focuses on core required courses as well as another to center on an area of emphasis.

Comiskey (2014) examined the question of *How Do College Homeland Security Curricula Prepare Students for Homeland Security*, through the use of an internet based survey. As part of the examination, 587 college faculty members that teach homeland security at a U.S. college or university were queried to derive data relevant to both undergraduate and graduate homeland security curricula. Comiskey defines homeland security as including prevention; mitigation; and response to international, natural, and accidental threats.

Comiskey (2014) found that the curricula taught emphasized a number of areas consistent with the definition, including terrorism, intelligence, emergency management, preparedness and all-hazards. Several recommendations are made regarding the findings of the examination to include the development of an academic definition of homeland security as well as a core and model undergrad /graduate curricula. He mentions that a consensus in defining homeland security is critical to provide the guidelines needed for colleges and universities to develop and revise curricula as needed to keep it current.

Brown (2015) and Stewart and Vocino (2013) while acknowledging that homeland security and emergency management are two differing disciplines, examines a number a previous studies which reviewed emergency management and ancillary homeland security educational needs. Brown's study (2015) shows that the education received by those surveyed, met their needs as emergency management practitioners. The study also indicates that in the future, higher education and emergency management/homeland security agencies should

continue to develop and provide academic and training programs for those entering the enterprise to improve and promote best practices.

Summary of Homeland Security and Emergency Management Education

The practice of emergency management has grown over the course of the past few decades to outpace the educational opportunities available, (Woodbury, 2005). At the same time, greater demands have been placed on the emergency manager, calling for a greater level of expertise and education to support the professionalization of the discipline (Wilson & Oyola-Yemaiel, 2001). Cwiak (2011), Blanchard (2008), and Oyola-Yemaiel and Wilson (2005) provide that the FEMA higher education project served as focal point in developing and defining emergency management educational needs nationally.

As educational programs across the U.S. emerged, they drew the attention of not only students, but of academics and researchers as well. Thomas and Mileti (2003) note that these programs emerged in an uncoordinated manner with little or no consensus as to the curriculum requirements. FEMA's higher education program would continue to serve as a focal point in the development competencies, curriculum and courses as highlighted by Blanchard (2008) and Cwiak (2008, 2009, 2011). Professional organizations like IAEM would also examine the development of a common body of knowledge (Spiewak, 2005).

Homeland security as both a concept and academic discipline changed in the wake of 9/11 and Hurricane Katrina (Reese, 2012). Similar to emergency management education, the evolution of homeland security as a practice would prompt higher education to respond by developing academic programs to meet emerging needs (Bellavita, 2011; National Research Council, 2005; Rollans & Rowan, 2007). Institutions would soon after 9/11 emerge to provide homeland security education and in leading this effort, CHDS would be established and serve to

not only develop a graduate level program, but provide other institutions with assistance in developing courses and curriculum for homeland security education (Comiskey, 2014).

Bellavita (2008) provides that without an "explicit" definition for homeland security, that contentious discourse will develop as to one's truth regarding homeland security. Based upon "one's truth" and the definition embraced, the precision as to one's view can be more grounded in traditional security or a blended view involving emergency management. He offers seven definitions of homeland security that vary in scope. In a survey conducted by CHDS, he reveals that nearly 40% of the respondents defined homeland security in a blended manner including aspects of all-hazards, terrorism and national security. The next largest group (18% of responses) indicated that it was all-hazards associated. Bellavita (2008) provides that your definition will establish your view as to how inclusive or exclusive you are of other various public safety capabilities.

When reviewing a wide range of studies that attempt to define curriculum requirements for homeland security, it becomes increasingly clear that the research and curriculum requirements defined within tend to align with how a researcher defines homeland security. Drabek (2007) Kiltz (2009, 2011, 2012) consider the integration of both a homeland security and emergency management curriculum, to be requisite for the future while noting the cultural divide between the two. Despite these acknowledgments however, the differences, should not preclude integration to best meet the increasingly more complex demands of HSEM enterprise today and into its future.

Chapter 3

Research Methodology

Introduction

Quantitative research was conducted using best–worst scaling (BWS), a method developed by Louviere. BWS allows us to examine and measure preferences between items (in this case, educational themes) and to scale the level of preference from most to least preferred. This chapter covers how BWS was used, as well as the background and theoretical basis for this tool.

Research Question and Hypothesis

The purpose of this exploratory research was to examine what homeland security and emergency management (HSEM) education themes practitioners feel should serve as the core for an HSEM baccalaureate degree.

As Drabek (2007) notes, in the past 30 years, there has been a tremendous growth in higher education programs focused on emergency managers. Additionally, in the wake of the attacks of 9/11, curricula focused on homeland security competencies have also been developed. Some have advocated for these programs to become better integrated.

Given the exploratory nature of this study, there is little relevant information from the review of the literature to assist in developing a refined hypothesis concerning the combined nature of an HSEM baccalaureate program. The substantial body of previous examination and research undertaken by both researchers and academics concerning emergency management education (Cwiak 2008, 2009; Jaffin et al., 2011; Oyola-Yemaiel, & Wilson, 2005; Quarantelli, 1992; Thomas & Mileti, 2003) has informed us on varying aspects of emergency management

education; however, these works do not address the broader aspects of integrating homeland security education within the curriculum.

In the wake of 9/11, with the establishment of DHS and other events of national significance, such as Hurricane Katrina, where DHS actions were noted as lacking, the need for a more inclusive homeland security education emerged (Bellavita & Gordon, 2006; National Research Council, 2005; Ramsay et al., 2010; Rollins & Rowan, 2007; Smith, 2005). The existing research on homeland security specific education has been summarized at length within the literature review (Bellavita & Gordon, 2006; Pelfrey & Kelley, 2013; Ramsay et al., 2010). There is no examination covering how an integrated homeland security and emergency management education might address the needs of an ever-evolving HSEM enterprise.

Drabek (2007) acknowledges the challenges of an integrated HSEM curriculum, such as reconciling the disciplines' different emphases (terrorism vs. all hazards) and management styles (hierarchical vs. coordination). Still, he believes neither discipline to be superior to the other and that a bridge should be built between the two. McCreight (2009) furthers this discussion by asking, "if homeland security and emergency management are operational cousins in educational terms, how do we adequately prepare future generations for the profession?" (p. 1). He notes similar challenges to Drabek and further elaborates on the lack of consensus as to what should be taught.

Kiltz (2011), Polson et al. (2010), Comiskey (2014), and Brown (2015) broaden the examination of integrating homeland security and emergency management education through individual research with both the academic and practitioner communities. Similar to the views of Drabek, Kiltz (2011), while noting the cultural differences between the two fields, affirmed the interdisciplinary needs of integrating the two domains. The nature of increasingly more complex

challenges must be addressed to provide for the integration of the educational spheres within the enterprise. Polson et al. (2010), Comiskey (2014), and Brown (2015) each address the larger aspects of an integrated homeland security and emergency management curriculum all similarly advocating for greater integration between the two disciplines (HSEM enterprise).

Population and Sample

The intended population surveyed as part of the research was North American practitioners within the homeland security and emergency management enterprise. As detailed previously within the review of the literature and by Reese (2012), in particular, this enterprise includes federal, state/provincial, local and tribal governments and private sector actors who address and coordinate an ever-evolving landscape of threats and hazards. The composition of this population reflected HSEM's growth and evolution and included those who serve as homeland security, emergency management, military and other public safety professionals.

The online survey asked practitioners to self-report occupations, selecting firefighting, law enforcement, emergency manger (federal, state, local), wildland firefighter, paramedic/EMT, security (private or federal or other), military, environmental health and safety, business continuity, cyber or InfoSec, Red Cross, or other. Survey respondents from appropriate occupations were contacted and asked to participate as part of the survey process based upon their membership, affiliation, or work within the HSEM enterprise. Individuals were contacted via two separate strategies to request individual participation. Individuals within the HSEM enterprise were contacted directly to request their participation as well as to encourage them to solicit the participation of other professionals with whom they work. Second, individual emails were sent to members of organizations related to the HSEM enterprise to request their participation and advocacy to request contemporaries to participate as well.

Survey respondents who opted to participate were provided with a hyperlink to an internal website managed within the HSEM program here at the University of Alaska Fairbanks to register individuals by name, email address, and location. After completing the registration process, each individual was provided a redirect link separate and distinct from the registration process that would then allow him or her to participate in the survey. Consistent with the guidelines of the Office of Research Integrity (ORI) guidelines, registration data specific for each individual who participated was kept in a database separate from the survey managed by Sawtooth Software. This separation of data and registration provided for the privacy of information submitted by each respondent. It further ensured that initial registration information would not be correlated to input provided by a respondent in Sawtooth. The University of Alaska Fairbanks Institutional Review Board (IRB) letter of exemption dated October 6, 2016, Homeland Security and Emergency Management Education Investigation [96308-1] is on file both with the Office of Research Integrity and the School of Management (Appendix F).

Orme (2010) recommends that for conjoint analysis, robust quantitative research requires a sample size of 300 respondents, although as few as 30 to 60 is sufficient for investigational work or hypotheses development. BWS is a new research tool not previously used to investigate either homeland security or emergency management education perspectives, so at the onset of this research it was not well understood how receptive practitioners might be to the use of this survey tool and method.

Data Collection

The HSEM core education survey was developed utilizing a total of 87 separate items comprised of Bellavita and Gordon's (2006) 51 "educational themes" and Darlington's (1999) 36 "study areas." These combined themes were selected to provide a broad selection of education

themes for survey respondents. The broad list ensured that the initial list did not inadvertently screen out any potential educational themes which practitioners might feel ideal to serve as the core basis for HSEM baccalaureate degree. Appendix G shows the cumulative list of themes developed by Bellavita and Gordon (2006) and Darlington (1999), as provided to survey respondents (practitioners).

The survey required respondents to view multiple (18 total) sets of five items (based on the 87 themes above). Within each set of five items, respondents selected both the best (most important) and worst (least important) theme. The following section on instrumentation provides more specific detail on the construct and rationale within the survey as it pertains to the methodology for developing statistically reliable data. For the context of this survey, each theme encompassed general HSEM educational subject matter content associated with a course covering the themes outlined.

Individuals who registered to participate in the survey were automatically forwarded to the Sawtooth online survey landing page. A sample survey for this research project is included in Appendix H, which explains the introduction, segmentation (background, occupation, etc.), sociodemographic questions, and best–worst scaling method in greater detail.

The pretest for the initial build of the survey was conducted from 26 to 28 September 2016, during which five individuals who served as practitioners within the HSEM enterprise reviewed the survey for structure and clarity. These initial reviewers were asked specifically to provide feedback on the survey user experience and clarity of survey instructions. The pretest resulted in greater refinement of the survey and increased the overall clarity of the survey instructions.

The pilot for the survey was conducted from 7 to 14 October 2016. It was distributed to a total of 18 individuals, with 16 participants both completing the survey and responding to a pilot questionnaire. Pilot-survey feedback demonstrated that the instructions refined as a result of the pretest improved the overall understanding of the survey. The pilot survey results also helped to revise the survey overview to specify the use of the survey as it pertained to a baccalaureate, 4-year HSEM degree program.

Both the pre- and pilot test helped to ensure that the registration process and survey instructions would allow for smooth delivery of the actual survey. Because the registration page used a separate and distinct process to collect respondent information from the Sawtooth Software host website, additional tests were run to ensure the "redirect" protocol from one host to another would take place seamlessly. The initial tests conducted with the redirect feature demonstrated that accurate registration information could be collected and that a timely transition from the registration to the Sawtooth Software host would take place.

The actual survey for the experiment was open between 24 October and 28 November, 2016. Two anomalies that affected registration and subsequently participation were experienced during the open period for the survey. The first anomaly experienced during the conduct of the survey was a slowdown in the redirect from the registration page to the survey landing page in Sawtooth. Individuals who had registered experienced a lag in from registration to the landing page for up to 30 seconds (as per internal tests). The consequence of this lag caused several participants to "time out" during the redirect, requiring them to either reregister or to drop and not participate. This anomaly occurred on number occasions, although they lasted for a limited period (1 hour or less). These events were detected as a result of the feedback provided by survey participants attempting to register.

A second anomaly similar to the first prevented individuals from accessing the registration page and, therefore, prevented participation. Once it was discovered that the registration page was down, the vendor (separate and not associated with Sawtooth Software) was contacted to determine the source of problem and defined timeline for when the webpage would be restored. The registration page had periods of limited accessibility from 15 to 17 November and, eventually, returned to full capability by the afternoon of the 17th Eastern Standard Time (EST). The effect of this "blackout" on survey participation rates is unknown.

Instrumentation

Overview of Best–Worst Scaling

Best–worst scaling (BWS) is an analytical method used to measure rank preferences among multiple items. Originally developed by Louviere in the late 1980s, BWS was designed to obtain greater accuracy in the selection of extreme options. The increasingly more popular technique, also referred to as maximum difference or MaxDiff scaling, requires subjects to select the pair of stimuli from a larger set of stimuli that exhibited the largest perceived difference (for example, most and least preferred option, or best and worst option) (Louviere, Flynn, & Marley, 2015). According to Orme (2005), BWS found many early applications in public policy and marketing, where it was used to determine and measure the importance of preference in terms of products, brands or a variety of differing attributes. BWS has become a popular technique across a variety of disciplines, providing an efficient and reliable choice-based method which can be employed to produce measured utility values.

Finn and Louviere (1992) demonstrated the value of BWS in research paper published in the *Journal of Public Policy and Marketing*. Finn and Louviere conducted public opinion surveys to understand public concern regarding food safety and identify what actions should be

taken in response to these concerns. Finn and Louviere used BWS as part of the research as a low-cost alternative to traditional, more costly survey methods. Finn and Louviere discovered that respondents were not as concerned about food safety as they were about a number of topics identified as possible public concerns. The use of BWS not only served to provide greater accuracy as to the concerns of the public, but also prevented the unnecessary expenditure of public funds to convince the public as to the safety of its food supply through the use of a public information campaign.

Interest in BWS as a type of discrete choice experiment (DCE) continued to grow during the early 2000s, gaining popularity in health economics (McIntosh & Louviere, 2002) and professional marketing research, where practitioners applied BWS to better determine consumer preferences (Cohen & Markowitz, 2002; Cohen, & Neira, 2003). Health economists have continued to value the use of BWS and have highlighted its use in the conduct of healthcare research (Flynn, Louviere, Peters, & Coast, 2007) where it was further examined in an empirical comparison with DCE (Potoglou et al., 2011) for an Outcomes of Social Care study in England. Potoglou et al. noted similar results between the two designs, however it was noted that BWS placed less of a cognitive burden on the survey respondents in contrast to the DCE. BWS has also been used in food and wine research, relating wine attributes to consumer preferences (Casini, Corsi, & Goodman, 2009; Cohen, 2009; Goodman, 2009; Goodman, Lockshin, & Cohen, 2008) and measuring sensory attributes in food science (Louviere, Flynn, & Marley, 2015). Orme (2005) posits that the interest and significance in MaxDiff (BWS) has been reinforced in the form of published papers and awards, include recognition by the European Society for Opinion and Marketing Research (ESOMAR) as well as with Sawtooth Software conferences (Chrzan, 2004; Cohen, 2003; Cohen & Markowitz, 2002). Cohen (2003) suggests

that practitioners conducting associated research adopt maxdiff scaling over traditional rating scales in order sidestep issues related to scale bias. Compared to traditional methods and paired comparisons, BWS is scale-free, forcing respondents to provide the relative importance to an objects or item and in the end, ensure greater discrimination among items and groups of objects /items.

Beyond the disciplines discussed above, BWS has gained broad acceptance as a research methodology for conducting discrete choice experiments in both the social and business fields. It is worthy to note within the literature (Louviere, Flynn, & Marley, 2015) that marketing researchers often refer to BWS as maximum difference scaling or MaxDiff while academics using the term BWS. It is pointed out that seldom is a maximum difference choice selection process used so a better term of choice for the method became BWS (p. xviii).

Theoretical Basis of Best–Worst Scaling

For Finn and Louviere's (1992) initial work, the two selected BWS over the use of rating scales based on three separate considerations (Flynn & Marley, 2014). First, rating scales were less than ideal in forcing respondents to differentiate the value of multiple items, whereas BWS would have enabled discriminating measures for items of similar importance. Second, it was difficult to accurately interpret the rating scale points one would use to make selections within the scale, as there are no norms to evaluate opinion responses. Finally, the validity of rating scales in relation to reliability and the public are either unknown or unknowable. BWS was advocated as a method of scaling that could overcome these inherit limitations in paired comparisons by valuing items within a random utility framework based upon the earlier work of Thurstone (1927) and McFadden (1973).

Thurstones's (1927) law of comparative judgement argues that there is a psychological continuum involved in the paired comparisons of both physical stimulus intensities as well as qualitative comparative judgments. In making comparative judgments, Thurstone provides that there is a discriminal process that exists during one occasion when a judgment is made that can and will differ from another occasion when a judgement is made on a similar observation:

> The so-called 'just noticeable difference' is contingent on the fact that an observer is not consistent in his comparative judgement from one occasion to the next. He gives different comparative judgments on successive occasions about the same pair of stimuli" (p .26).

As a result, individuals make a comparative judgement based upon discriminal processes between a pair of objects or stimuli and select the object/stimuli for which they have a greater subjective preference (Vasquez-Espinosa & Conners, 1982).

Flynn and Marley (2014) examine three separate use cases of BWS developed by Louviere, each differing in the nature and complexity of the items and structure of the stimuli. Case One, the simplest of the three cases, is used by researchers primarily focused on the relative values for a group/ list of objects. Case Two BWS analysis looks at sets of profiles with attributes within each set. Case 3 analyzes multiple profiles with varying attributes. For the research undertaken as part of this dissertation, Case 1 (object) will take place to evaluate a list of objects.

Marley and Pihlens summarized and updated the probabilistic models of best, worst, and best–worst choices in 2005 (Marley & Pihlens, 2012). The BWS mathematical model specified for a case one study, individuals choose the best item available in the subset of options and likewise select the worst item in the set. Should the two items be different, the paired best–worst

is chosen; if the two options are the same, the process of selection is repeated, "resampled" from the items available until a defined best–worst choice is made.

McFadden (1973) expanded beyond the Thurstone's paired comparisons to account for an increased number of comparisons for three and beyond. Based upon this combined body of work, the principle theoretical basis for BWS resides. McFadden's random utility theory (RUT) provides for the ability to analyze choice frequencies and to obtain a metric by which one object might be selected over that of another.

Applying McFadden's (1973) work on multinomial logit to BWS, we recognize that the probability of choosing some alternative A from a set of alternatives is proportional to the ratio of the utility of alternative A to the sum of the utilities of all the alternatives available for choice. Specifically, the probability of choosing A is the ratio of the exponentiated utility of alternative A to the sum of the exponentiated utilities of alternative A, B, C…k, as shown in Equation 1:

$$P\,(A) = \frac{\exp(U_A)}{\sum_{i=A}^{i=k} \exp(U_i\,)} \tag{1}$$

Design of a Best–Worst Scaling Experiment

Best–worst scaling as a discrete choice procedure provides survey respondents the ability to compare and then select both the best and worst attribute subjectively within a defined block of items. The defined blocks of attributes are extracted from an overall list or a collection of attributes and are presented to the respondent in a subset of at least three, although presenting four to five items is recommended (Orme, 2009). Each subset is displayed a sufficient number of times to ensure that each item is compared against other items from the overall collection. Respondents are asked to select both the best (most important) and worst (least important) option from a subset of items. Figure 1 is an example of a best–worst question for a Case 1 type survey.

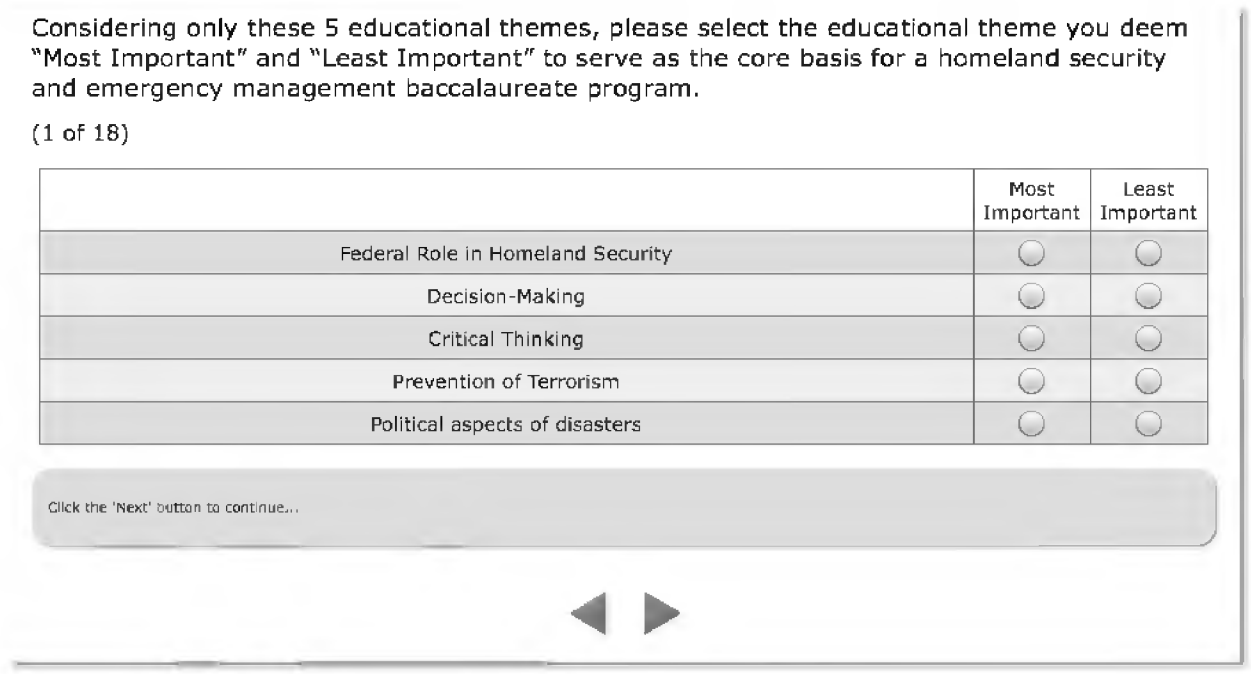

Figure 1. Example of a best–worst question for a case 1 type survey.

In designing a survey for BWS, frequency balance, orthogonality, connectivity and position balance must be carefully considered (Orme, 2013). Frequency balance ensures that an item appears an equal number of times within the survey. Orthogonality provides for an item being paired with each other item an equal number of times within the survey. Connectivity provides for the ability to associate interconnected relationships for an item to other items even if they were not directly paired. Finally, positional balance provides for item to appear an equal number of times within the rows of the survey to prevent bias based on position.

This survey used commercial analytics and survey programming provided by marketing research consultant Sawtooth Software (Sawtooth.com). Sawtooth Software's Lighthouse Studio program gives users the ability to design and program a survey that meets the frequency balance, orthogonality, connectivity, and position balance requirements for an effective BWS study (Designing the study, n.d.). An algorithm built into the software ensures design efficiency

consistent with the above criteria and manages survey delivery to ensure respondents are provided only those designs which meet the specified delivery criteria.

Sawtooth's algorithm ensures that, within each variation of the survey, each item appears with every other item an equal number of times. Sawtooth uses a balanced incomplete block design (BIBD) to ensure that every item in the survey is distributed in a uniform manner. Rink (2016) notes that the use of BIBDs can be especially important to data collection methods where the number of items examined is large, but the number of respondents limited. BIBDs provide not only a more effective means by which to collect subjective data, but also enhance the reliability and accuracy of the data as well.

As Orme outlines in the *MaxDiff System Technical Paper Version 8* (2013), for the design and delivery of a survey via BWS, it is recommended that each survey respondent see each item at least three times during the course of the survey if respondent-level utility via Hierarchical Bayesian (HB) or mixed logit is to be analyzed. For a survey in which K items would be compared, there are $\frac{K-1}{2}$ paired comparisons which could take place. If there are 12 items to be compared, for example, there are $\frac{12(11)}{2} = 66$ paired comparisons. However, utilizing BWS, not all comparisons need to occur to provide for a "stable estimate of item scores" (p. 7).

In this study, 87 separate items were examined via BWS. With a list of this size, a paired comparison study would yield 3,741 separate comparisons. However, as Orme (2013) and *Designing the Study* (n.d.) instructions explain, the size of the study can be reduced significantly as long the number of sets at least equal $\frac{3K}{k}$, where K is the number of items within the study and k is the number of items to be displayed in each set. Based upon this, $\frac{3(87)}{5}$ requires the examination of 52.2 subsets of items. This is still a large number of subsets in a survey, which

brings the problem of balancing the requirements of designing meaningful research with and the need to maintain respondent engagement without exhausting their attention spans (Jones & Yeh, 2013). Wirth and Wolfrath (2012) introduced two new methods for evaluating large numbers of items in BWS models that reduce the overall survey size without compromising the positive effects of the BWS procedure. The two new methods as outlined were "express" and "sparse" maxdiff, which maintain many of the features of a standard BWS design, but vary in the array of items and the number of subsets each respondent sees during the survey.

When using the express maxdiff described by Chrzan (2015), each respondent does not view the entire master list of items the survey; instead, respondents see a reduced number of items, the recommended three to four times. Other survey respondents are exposed to the different items via the provided subsets. This survey construct allows all of the items to be analyzed across the breadth of the survey, however, within the survey, no single respondent is exposed to every item. Wirth and Wolfrath (2012) provide that the "borrowing strength" characteristic of HB analysis allows for the ability estimate information across the survey based upon the express maxdiff responses.

Sparse maxdiff differs from express and standard max diff in a couple of important ways. Whereas, in an express maxdiff survey, a respondent would only see a portion of the items to be examined but see them at least three times, in a sparse maxdiff, the survey respondent would see each item to be examined, but usually only a single time. Unlike a standard BWS, sparse maxdiff is capable of handling a larger number of items for examination. In terms of the level of complexity required to develop a sparse and express maxdiff survey, Wirth and Wolfrath (2012) note that the express is more complex in its design than the sparse maxdiff. They also note that, on average, Sparse maxdiff has a shorter interview period and greater predictive validity.

Considering the design parameters for the sparse survey, where every item would be examined once rather than three separate times and the number of items to be examined for best /worst in a subset of five, the number of total sets each respondent would see would be expressed as $1K\frac{(87)}{5} = 17.4$. This provides for a survey respondent to examine a total of 18 sets of five; a total of 90 items. It should be noted that the BWS survey design algorithm provides for experimental design blocks that would vary from survey respondent to survey respondent to account for the additional three items seen with each survey.

The design process generates 1,000 separate variations of the survey (by default) to ensure a design is sufficient for delivery (Designing the study, n.d.). The survey is designed to be delivered online, which provides easy access to respondents and the ability participate at the time of their choosing (within the defined 30-day open period). For researchers, Sawtooth's online capability provides a high degree of ease when it comes to building, delivery, and analysis of the survey.

Analysis of Best–Worst Scaling Data

Best–worst scaling data can be analyzed several ways, allowing for individual level score estimation as well as aggregate level counting for analysis. The analytical approaches taken to analyze BWS data vary depending on the type of BWS study (Case 1, 2 or 3) conducted (Adamsen, Rundle-Thiele, & Whitty, 2013).

Simple counts are the simplest form of resulting BWS aggregate level data. A simple counting analysis provides a count for each item and the number of times it was selected as either a best or worst choice overall. The more often an item is selected as a best demonstrates a higher degree of preference for that item within the survey population. The more often an item is chosen as a worse choice indicates less favorability compared to the best choice.

Beyond the simple counts, survey results can also be examined as proportional values. The times an item is selected as a best (B) can be divided by the times it was shown overall (S) to provide the best count proportion (Y), where $\frac{B}{S} = Y$. Conversely, the same can be done to provide for the proportion an item is selected as worse. A higher proportion of times an item is selected best again indicates a higher degree of favorability for survey respondents. A lower proportional value indicates a lesser degree of favorability.

According to Orme (2009), the current gold standard for estimating individual scores within BWS is HB analysis utilizing the multinomial logit model. The HB estimation scores are provided in several forms, including raw, rescaled and probability scores. The raw scores are a utility score drawn from the multinomial logit (MNL) procedure used by Sawtooth's HB engine. The scores are zero-centered for each respondent; based on respondent's best-worst choices, items are assigned either a positive or negative weight. The weights are on an interval scale which do not support ratio scaling to indicate the level of preference (scaled) from one item to another; "in other words, you cannot state that an item with a score of 2.0 is twice as important (or preferred) as an item with a score of 1.0" (Individual-level score estimation, n.d.) Based upon the logit, an item with a higher utility (preference score) is more likely to be chosen as "best" when compared to others with a lower score. Consequently, the lower a utility score, the less likely it would be selected.

Rescaled scores are individual-level item scores with positive values which sum to a total of 100. The raw scores provided by the HB estimation are converted and scaled for significance. The scores' positive values indicate the likelihood of items being chosen within the questionnaire and, like the raw scores, are scaled. Unlike the raw scores, this approach provides for ratio scaling (an item with a score of 10 is considered twice as important as an item with a score of 5).

Sawtooth indicates (Individual-level score estimation, n.d.) that most researchers tend to use this scaling procedure, as it is easy to interpret and present to others. The first step of the rescaling procedure, as explained by *MaxDiff Analysis Using CBC/HB v5x* (n.d.), is to zero-center the weights of the scores. This is achieved within the Sawtooth MaxDiff analyzer by subtracting the mean weight for each respondent, from each respondent's weights. Following this, each zero-centered score is converted using the formula

$$\frac{eU_i}{(eU_i + a - 1)}, \tag{2}$$

where U_i is a zero-centered raw logit weight for item i, eU_i is equivalent to the antilog of U_i, and α represents the number of items shown per set.

The software then scales the transformed item scores using a constant as a multiplier to achieve a sum of 100. As noted in the *MaxDiff Analysis Using CBC/HB v5x* (n.d.) guide, the conversion of raw scores to (as developed within the logit) "to probabilities true to the original data generation process (the counts)" (p. 2) The overall goal is to ensure consistency in the scaling of weights, both in the context as well as assumed error level from the sets presented.

The probability of choice scores reflect the probability (0–100%) that an item would be selected as the best choice by a respondent from a typical set of items within the survey. Given that the survey for this research has five items within each set, the probability of choice reflects the possibility that an item on average would be selected best when compared to the four other alternative items within the set.

Sawtooth Software additionally provides a confidence interval as part of the scores resulting from the analysis. The confidence interval is computed by estimating the standard error for each item and adding ±1.96 standard errors to the mean scores (Orme, 2013). Standard errors for each score are computed by taking the standard deviation and dividing it by the square root of

the sample size. The confidence interval demonstrates the level of certainty estimate of the item's score that is provided. Simply put, if the experiment were repeated 100 times, we would be confident that the mean scores for the population would fall within the 95% confidence interval 95 times out of 100.

Another method used to analyze BWS results is total unduplicated reach and frequency analysis (TURF), an algorithm that allows researchers to find a subset or portfolio of the items examined that could potentially "reach" the widest unduplicated audience, or survey participants in this analysis (Howell, 2016). The "frequency" refers to how often members of the audience are reached in relation to the items examined. TURF provides the ability to extend the analysis beyond what may have been selected as the most popular items or educational themes in the survey. This secondary analysis can identify some of the items (educational themes), which may have not been the most popular in the survey, but could have a broader appeal to a wider audience.

Squire and Orme (2012) provide an example for the use of TURF in finding an optimal portfolio of items to reach a broad number of survey respondents. Suppose that a grocery store may have only enough room to sell seven of a possible 42 flavors that could be offered. The grocer wants to maximize the potential that a shopper will find a flavor they want to purchase, so he stocks flavors in a way to make sure all his different kinds of customers have at least one flavor that appeals to them. If, instead, the grocer were to sell only the seven most popular of ice cream flavors, niche flavors that appeal to certain segments of the population would be ignored. In the terms of TURF, the grocer applies a "threshold" method to make sure as many potential shoppers as possible have been "reached."

The Maxdiff analyzer provides several ways to determine reach within TURF. One is "first choice," where a respondent can be counted as reached if the subset of items they are presented with contains their top item (raw score). If there are multiple top items as a result of the respondent having several top items, then the other top items will be noted as "reached" with a partial reach value of $1/n$, with n serving as the number of top items.

A second way in which the Maxdiff analyzer determines reach is with "threshold." With the threshold, if the probability of choice within the set examined exceeds the supplied threshold provided an item (from the respondents' probability of choice), then the respondent is considered reached. Should two sets have an equal reach, then the set with the greater frequency is preferred.

As noted within the Maxdiff Analyzer Help (n.d.) assistance page for TURF, there is an internal limitation for the number of portfolios that can be evaluated during a TURF run. The size limitation is set at 5,000,000, with the system automatically switching to a stepwise algorithm in the event the limit is exceeded. This self-imposed limitation is created to ensure that the experiment conducted within the TURF application can be conducted in a reasonable amount of time. In considering the formula to determine the number of portfolios, an exhaustive TURF procedure will process countless combinations to fit the defined criteria (see Equation 3). It is apparent that an exhaustive (standard) analysis has the potential to run an extremely large number of possible sets:

$$\frac{m!}{n!\,(m-n)!} \tag{3}$$

where m is the total number of items in the study and n is the size of portfolio to optimize.

Going back to the ice cream analogy for the use of TURF, an example provided by Squire and Orme (2012) notes that in searching for 21 flavors of ice cream from a total of 42

possible would require the examination of 538,257,874,440 portfolios—for each respondent. An examination of this size is not practical when it comes to solving a complex problem in a reasonable amount of time. Instead, a Stepwise TURF analysis can be used to find near optimal results in a far shorter period of time.

The stepwise TURF algorithm breaks the steps of an analysis down in sequential steps to reduce the overall number of portfolios that need to be analyzed in a search. An example provided within the Maxdiff Analyzer Help (n.d.) notes that for a search for 12 items out of 40, the first step in the sequence would be to find the best four items out of the out of the 70, which would dramatically reduce the number of portfolios examined. Those four items would then be forced into a second round of an exhaustive search, to find the next four best items. Then, in the third sequence, the previous eight items that were selected, would be forced into an exhaustive search where the final four items selected best would be found.

The very last portion of the stepwise TURF analysis procedure involves the use of swaps. The additional of swaps for an item within the portfolios ensures that one last additional look is considered regarding the reach of a given portfolio. The use of swaps allows the introduction of an item not selected as best to be examined within each portfolio to determine if the portfolio is more attractive as a result of this items introduction. Should a swap have the ability to lead to a new portfolio that is more attractive than the previous portfolio, it is kept. If it does not make the portfolio more attractive, it is not kept and the iterative process is run until all of the swaps within the algorithm have been made. The swaps can be made until no new ideal portfolios are found, and within a very short period of time as compared to the standard exhaustive procedure (Squire & Orme, 2012). This iterative process significantly reduces the number of portfolios to be examined while simultaneously, following the principles of the TURF analysis process.

As noted previously in the review of the literature, research examinations regarding the educational needs of emergency management and homeland security practitioners have been numerous. While the efforts of emergency management educators predate those within the domain of homeland security, greater discourse has developed as to the advantages of an integrated homeland security and emergency management education. While historical and cultural differences may exist, the need for integrated program which account for the interdisciplinary needs of a workforce operating in a challenging and ever increasingly more complex environment are also understood.

Many of the previous examinations have used research tools such as the Delphi method, Likert scales, and even the development of inventory lists to identify or determine HSEM specific subject matter needs. This examination utilized a quantitative methodology unlike previous efforts to investigation workforce needs based upon survey results obtained from practitioners. The use of BWS and TURF analysis served as a novel examination for HSEM educational development and helped examine what should serve as the basis for the HSEM core educational needs in a baccalaureate program.

Chapter 4

Research Findings

Response Rate

A total of 1,149 individuals registered to participate in the survey, of which 1,006 (n = 1,006) individuals completed the survey. The incomplete surveys, n = 143 (12.5% of survey registrants), may have failed to complete the survey due to previously noted technical issues with the survey registration page. Additionally, it is possible that some incomplete surveys participants may have been prohibited from accessing the survey due to internal internet protocols at the organizations at which survey participants registered for the survey.

Considering the two-pronged approach to solicit survey participation, using social networks as well as direct email requests, a defined response rate cannot be determined. While there were n = 2,486 emails sent, these emails not only requesting participation but also further distributional along professional lines to practitioners. It is likely that participants forwarded the HSEM survey registration link at their place of work or within their social networks and affiliated professional organizations. While this was part of the intent of the distribution process, it prevents us from determining the total reach of the survey within the intended audience, and thus calculating a response rate.

Demographic Data

The practitioner respondent population for this study (see table 1) reflected a split of 75% (n = 755) male and 25% (n = 251) female. In contrast to the U.S. Bureau of Labor Statistics (BLS) (2015) labor distribution rates by gender (male 53% and female 47%), the survey population skewed male. Further examination should be made to determine if the survey

population for this study is truly representative of the national labor distribution rates for the wider context of those who comprise the HSEM workforce. To provide for that more focused examination, a more detailed analysis with continued research would better define the totality of the occupations within the enterprise.

Table 1

Labor Force Participation by Gender

	Count	
Gender	*n*	%
Male	755	75
Female	251	25
Total	1,006	100

The respondent age distribution (see table 2) mimicked that of the overall U.S. labor force; however, survey respondents in their 40s and 50s outnumber those in the general labor force. The participation by age comparison between the survey population and the U.S. labor force indicates there are proportionally more HSEM practitioners in the workforce between the ages of 40 to 49 and 50 to 59 than corresponding year groups within the overall labor force, and proportionally fewer very young and very old workers. Managerial level HSEM careers are often second careers for seasoned emergency responders and veterans, so it is not unexpected to find a larger preponderance of 40- to 60-year-old mid or late career professionals in the field.

Table 2

Labor Force Participation by Age

	Count	
Age	*n*	%
<20	0	0.0
20–29	72	7.2
30–39	188	18.7
40–49	286	28.4
50–59	312	31.0
60–69	134	13.3
70–79	14	1.4
Total	1,006	100.0

The data on race/ethnicity gathered by the survey did not provide an apples-to-apples comparison with BLS data. Civilian labor force data provided by the U.S. Bureau of Labor Statistics (BLS) *Civilian Labor Force Participation Rate by Age, Gender, Race, and Ethnicity* (2015) provides for a percentage of participation by race (White = 79.1%, Black = 12.1%, Asian = 5.6% and all other = 3.2%) for a total of 100%. BLS does not record statistics for those who identify as Hispanic. BLS also pools Native/American Indian and Pacific Islanders together as "other." In this study, Hispanic, Native/American Indian, Asian and Pacific Islander were considered as independent items. The greater granularity of study participant race/ethnicity data as compared to what is provided in the BLS information makes a defined comparison of the race/ethnicity information between the study and participation difficult. In review of the participation rates by race/ethnicity, further analysis may be warranted to compare the rates

between the general population and those of the professions which make up the entirety of the HSEM enterprise.

Table 3

Participation by Race/Ethnicity

	Count	
Race/ethnicity	*n*	%
White	876	87.1
Hispanic or Latino	33	3.3
Black or African American	30	3.0
Native American or American Indian	11	1.1
Asian / Pacific Islander	22	2.2
Other	34	3.4
Total	1,006	100.0

Practitioner respondent count by occupation within the HSEM enterprise is found in Table 4. The highest count by occupation was "Emergency Manager (Federal, State or Local level)," which accounted for 54.7% (n = 548) of the population. The next largest group was "Other," which accounted for 13.5% (n = 136) followed by Law Enforcement Officer, 11.5% (n = 116) and then Firefighter at 7.1% (n = 71). The smallest pool of respondents came from the Wildland Firefighter 0.7% (n = 7) and Red Cross 0.7% (n = 7).

Table 4

Participation by Occupation within HSEM Enterprise

	Count	
Occupation	*n*	%
Firefighter	71	7.1
Law enforcement officer	116	11.5
Emergency manager (federal, state, or local level)	548	54.5
Wildland firefighter	7	0.7
Paramedic/EMT	14	1.4
Security (private, federal)	29	2.9
Military (active, guard, reserve)	42	4.2
Environmental health and safety	12	1.2
Business continuity	15	1.5
Cyber security or InfoSec	9	0.9
Red Cross	7	0.7
Other	136	13.5
Total	1,006	100.0

Findings

The purpose of this study is to investigate what educational themes homeland security and emergency management (HSEM) education practitioners determine necessary to serve as the core for an HSEM baccalaureate program.

Best–Worst Scaling Results

Aggregate-level discrimination. Simple counts (Table 5) are the least complicated output from a BWS experiment that allows us to examine data at the aggregate level. The simple counts scaling data reflects the frequency with which and item was shown within the survey, and the number of times it was selected as a best choice as well as the number of times it was selected as a worse choice. The greater the frequency for which an item was selected as a best indicates a higher degree of preference within the survey population. The greater frequency for which and item was chosen as a worse choice indicates it having a lesser or higher degree of unfavorability as compared to the best choice. Appendix I provides simple count scaled data for all 87 HSEM educational themes (items) examined within BWS experiment. Table 5 provides a rank ordered overview for the top 25 educational themes established by the survey. The best/worst proportion reflects the likelihood at the aggregate level that an item would have been selected as either best or worst within the set of five items it appeared. The best/worst counts for each item represent the aggregate number of times an item was selected as either a best or worst from the set of five items in which it appeared. As noted in Section III, the higher proportion of times an item was selected best indicates a higher degree of favorability for survey respondents. A lower proportional value indicates a lower favorability.

As previously developed in Chapter 3, the rationale for utilizing both the best and least worst counts was due to the high degree of correlation between those topics which ranked most favorably, receiving the least worst number of counts (see Table 6). This association serves to reinforce consensus within the survey population as to the high degree of affinity they had for those topics most often selected best.

Table 5

Simple Counts of Top 25 Items by Rank Order Times Selected Best

Rank	Item	Label (educational theme)	Times selected best	Best count proportion	Times selected worst	Worst count proportion
1	5	Disaster planning and preparedness	621	.596	10	.010
2	8	Disaster response and operations	519	.501	26	.025
3	80	Emergency management	519	.499	26	.025
4	4	Emergency management skills	488	.467	48	.046
5	82	Exercises and training	481	.463	32	.031
6	3	State and local emergency management	480	.460	23	.022
7	60	Role of state and local governments	463	.446	39	.038
8	63	Critical thinking	463	.446	76	.073
9	71	Interagency coordination	454	.435	31	.030
10	38	Risk management and analysis	448	.431	49	.047
11	57	Preparedness	444	.429	31	.030
12	7	Citizen and community disaster preparedness	437	.421	55	.053
13	26	Public administration and emergency management	420	.403	65	.062
14	72	Leadership	420	.403	73	.070
15	69	Decision-making	413	.396	62	.059
16	9	Hazard prevention and mitigation	408	.392	28	.027
17	1	General emergency management	391	.377	94	.091
18	10	Disaster relief and recovery	344	.330	27	.026
19	2	Profession of emergency management	334	.321	177	.170
20	47	Sociology of homeland security	322	.310	203	.195
21	34	Media, disasters and emergency management	313	.301	68	.065
22	39	Critical infrastructure protection	311	.299	51	.049
23	52	Strategic planning & budgeting	310	.298	105	.101
24	6	Disaster warning systems and citizen response to warnings	292	.271	127	.118
25	32	Public health and emergency management	274	.263	40	.038

Table 6

Rank Ordered by Least Worsts

Rank	Item	Label (educational theme)	Times selected best	Best count proportion	Times selected worst	Worst count proportion
1	5	Disaster planning and preparedness	621	.596	10	.01
2	3	State and local emergency management	480	.46	23	.022
3	8	Disaster response and operations	519	.501	26	.025
4	80	Emergency management	519	.499	26	.025
5	10	Disaster relief and recovery	344	.33	27	.026
6	9	Hazard prevention and mitigation	408	.392	28	.027
7	57	Preparedness	444	.429	31	.03
8	71	Interagency coordination	454	.435	31	.03
9	82	Exercises and training	481	.463	32	.031
10	60	Role of state and local governments	463	.446	39	.038
11	32	Public health and emergency management	274	.263	40	.038
12	4	Emergency management skills	488	.467	48	.046
13	38	Risk management and analysis	448	.431	49	.047
14	39	Critical infrastructure protection	311	.299	51	.049
15	7	Citizen and community disaster preparedness	437	.421	55	.053
16	69	Decision-making	413	.396	62	.059
17	26	Public administration and emergency management	420	.403	65	.062
18	34	Media, disasters and emergency management	313	.301	68	.065
19	72	Leadership	420	.403	73	.07
20	63	Critical thinking	463	.446	76	.073
21	65	Strategic communications	262	.252	76	.073
22	78	Risk communications	231	.222	85	.082
23	11	Information technology and emergency management	269	.26	87	.084
24	86	Role of communities in homeland security	274	.263	93	.089
25	1	General emergency management	391	.377	94	.091

Individual-level discrimination. As previously noted, the current gold standard for estimating individual scores within BWS is HB analysis utilizing the multinomial logit model. For this examination, scores as provided in raw, rescaled and probability formats. These are all products of Sawtooth's HB estimation procedure. The raw scores in Table 7 are weights produced by the HB engine's MNL procedure. These scores can have positive or negative weights and are zero-centered with the average item weighted at zero. These scores, as noted in chapter 3, which are based upon the logit provide that a higher weight (preference score), indicate that the item selected would simply be more likely to be chosen as compared to others with a lower score. Consequently, the lower a weighted score, the less likely it would be selected. These weights, while on an interval scale, do not support ratio operations. As previously indicated, you cannot state that an item with a score of 2.0 is twice as important (or preferred) as an item with a score of 1.0.

The rescaled scores provide individual-level item estimation scores with positive values which sum to 100. These scores are derived from the raw scores but provide for scaled significance. As noted in section III however, unlike the raw scores, the rescaling provides for ratio-scaling where an item with a score of 10 would be said to be twice as favorable as compared to an item with a preference score of 5. These scores are often the most used by researchers for presentation and interpretation purposes. Table 8 provides for an overview of the top 25 items as rescaled scores; the total nonrank ordered list can be found at Appendix I.

The probability of choice scores in Table 9 are a derivative of the raw scores and the corresponding conversion of the rescaled scores as noted in section III. These probabilities reflect the likelihood (0-100%) that an item would be selected as a best choice by a respondent from a typical set containing five items within the survey. With each set within the survey

research having five items, the probability of choice reflects the possibility that an item on average would be selected best when compared to the four other alternative items within the set.

The cumulative list of aggregate and individual logit scores, sorted by alphabetical instead of by rank order, is presented in Table 10. This list demonstrates tremendous homogeneity in preferred themes. It is noted that three topics in total are only reflected a single time within the alphabetical sort.

Table 7

Raw Scores (Top 25 by Rank Order)

				95% *CI*	
Rank	Item	Label (educational theme)	Average	Lower	Upper
1	5	Disaster planning and preparedness	4.02	3.94	4.11
2	8	Disaster response and operations	3.33	3.24	3.42
3	80	Emergency management	3.23	3.14	3.33
4	3	State and local emergency management	3.08	3.01	3.16
5	82	Exercises and training	2.98	2.89	3.07
6	71	Interagency coordination	2.92	2.85	2.99
7	60	Role of state and local governments	2.90	2.81	2.98
8	63	Critical thinking	2.89	2.74	3.03
9	4	Emergency management skills	2.88	2.77	2.99
10	57	Preparedness	2.74	2.66	2.82
11	38	Risk management and analysis	2.61	2.51	2.71
12	9	Hazard prevention and mitigation	2.52	2.45	2.60
13	7	Citizen and community disaster preparedness	2.51	2.41	2.61
14	26	Public administration and emergency management	2.46	2.33	2.58
15	69	Decision-making	2.38	2.26	2.50
16	72	Leadership	2.30	2.18	2.42
17	1	General emergency management	2.24	2.11	2.37
18	10	Disaster relief and recovery	2.06	1.99	2.14
19	34	Media, disasters and emergency management	1.68	1.58	1.78
20	39	Critical infrastructure protection	1.61	1.54	1.68
21	32	Public health and emergency management	1.52	1.46	1.59
22	52	Strategic planning & budgeting	1.41	1.31	1.51
23	65	Strategic communications	1.37	1.28	1.46
24	11	Information technology and emergency management	1.24	1.16	1.33
25	86	Role of communities in homeland security	1.16	1.07	1.25

Table 8

Rescaled Scores (Top 25 by Rank Order)

Rank	Item	Label (educational theme)	Average	95% *CI*	
				Lower	Upper
1	5	Disaster planning and preparedness	3.05	3.02	3.08
2	8	Disaster response and operations	2.79	2.75	2.83
3	3	State and local emergency management	2.73	2.69	2.77
4	80	Emergency management	2.72	2.68	2.77
5	71	Interagency coordination	2.68	2.65	2.72
6	82	Exercises and training	2.64	2.60	2.68
7	60	Role of state and local governments	2.60	2.56	2.65
8	57	Preparedness	2.55	2.50	2.60
9	4	Emergency management skills	2.53	2.47	2.58
10	9	Hazard prevention and mitigation	2.45	2.41	2.49
11	38	Risk management and analysis	2.41	2.36	2.46
12	63	Critical thinking	2.39	2.33	2.46
13	7	Citizen and community disaster preparedness	2.36	2.30	2.41
14	26	Public administration and emergency management	2.27	2.21	2.33
15	69	Decision-making	2.24	2.18	2.31
16	72	Leadership	2.18	2.12	2.25
17	10	Disaster relief and recovery	2.17	2.12	2.22
18	1	General emergency management	2.16	2.09	2.22
19	39	Critical infrastructure protection	1.90	1.85	1.95
20	34	Media, disasters and emergency management	1.89	1.84	1.95
21	32	Public health and emergency management	1.83	1.79	1.87
22	52	Strategic planning & budgeting	1.74	1.69	1.80
23	65	Strategic communications	1.71	1.66	1.76
24	11	Information technology and emergency management	1.63	1.58	1.68
25	2	Profession of emergency management	1.59	1.52	1.66

Table 9

Probability of Choice (Top 25 by Rank Order)

Rank	Item	Label (educational theme)	Average	95% *CI* Lower	95% *CI* Upper
1	5	Disaster planning and preparedness	88.12	87.26	88.98
2	8	Disaster response and operations	80.63	79.44	81.82
3	3	State and local emergency management	79.03	77.92	80.14
4	80	Emergency management	78.68	77.36	80.01
5	71	Interagency coordination	77.75	76.67	78.82
6	82	Exercises and training	76.42	75.11	77.73
7	60	Role of state and local governments	75.43	74.08	76.77
8	57	Preparedness	73.68	72.37	74.99
9	4	Emergency management skills	73.18	71.59	74.77
10	9	Hazard prevention and mitigation	70.97	69.67	72.26
11	38	Risk management and analysis	70.15	68.59	71.71
12	63	Critical thinking	69.53	67.62	71.44
13	77	Citizen and community disaster preparedness	68.09	66.44	69.74
14	26	Public administration and emergency management	66.19	64.34	68.05
15	69	Decision-making	65.37	63.54	67.21
16	72	Leadership	63.57	61.68	65.46
17	10	Disaster relief and recovery	62.80	61.34	64.26
18	1	General emergency management	62.62	60.67	64.57
19	34	Media, disasters and emergency management	55.29	53.55	57.04
20	39	Critical Infrastructure Protection	54.35	52.92	55.78
21	32	Public health and emergency management	52.86	51.59	54.13
22	52	Strategic planning & budgeting	50.89	49.13	52.65
23	65	Strategic communications	49.89	48.29	51.49
24	11	Information technology and emergency management	47.38	45.77	48.98
25	2	Profession of emergency management	46.58	44.47	48.69

Table 10

Counts and Scores Sorted in Alphabetical Order

Best counts	Least worst counts	Raw scores	Rescaled scores	Probability of choice scores
Citizen and community disaster preparedness	Critical infrastructure protection	Critical thinking	Citizen and community disaster preparedness	Citizen and community disaster preparedness
Critical infrastructure protection	Citizen and community disaster preparedness	Citizen and community disaster preparedness	Critical infrastructure protection	Critical infrastructure protection
Critical thinking	Critical thinking	Critical infrastructure protection	Critical thinking	Critical thinking
Decision-making	Decision-making	Decision-making	Decision-making	Decision-making
Disaster planning and preparedness	Disaster planning and preparedness	Disaster planning and preparedness	Disaster planning and preparedness	Disaster planning and preparedness
Disaster relief and recovery	Disaster relief and recovery	Disaster relief and recovery	Disaster relief and recovery	Disaster relief and recovery
Disaster response and operations	Disaster response and operations	Disaster response and operations	Disaster response and operations	Disaster response and operations
Disaster warning systems and citizen response to warnings	Emergency management	Emergency management	Emergency management	Emergency management
Emergency management	Emergency management skills	Emergency management skills	Emergency management skills	Emergency management skills
Emergency management skills	Exercises and training	Exercises and training	Exercises and training	Exercises and training
Exercises and training	General emergency management	General emergency management	General emergency management	General emergency management
General emergency management	Hazard prevention and mitigation	Hazard prevention and mitigation	Hazard prevention and mitigation	Hazard prevention and mitigation
Hazard prevention and mitigation	Information technology and emergency management	Information technology and emergency management	Information technology and emergency management	Information technology and emergency management

Table 10 continued

Best counts	Least worst counts	Raw scores	Rescaled scores	Probability of choice scores
Interagency coordination	Interagency coordination	Interagency coordination	Interagency coordination	Interagency coordination
Leadership	Leadership	Leadership	Leadership	Leadership
Media, disasters and emergency management	Media, disasters and emergency management	Media, disasters and emergency management	Media, disasters and emergency management	Media, disasters and emergency management
Preparedness	Preparedness	Preparedness	Preparedness	Preparedness
Profession of emergency management	Public administration and emergency management	Public administration and emergency management	Profession of emergency management	Profession of emergency management
Public administration and emergency management	Public health and emergency management	Public health and emergency management	Public administration and emergency management	Public administration and emergency management
Public health and emergency management	Risk communications	Risk management and analysis	Public health and emergency management	Public health and emergency management
Risk management and analysis	Risk management and analysis	Role of communities in homeland security	Risk management and analysis	Risk management and analysis
Role of state and local governments	Role of communities in homeland security	Role of state and local governments	Role of state and local governments	Role of state and local governments
Sociology of homeland security	Role of state and local governments	State and local emergency management	State and local emergency management	State and local emergency management
State and local emergency management	State and local emergency management	Strategic communications	Strategic communications	Strategic communications
Strategic planning & budgeting	Strategic communications	Strategic planning & budgeting	Strategic planning & budgeting	Strategic planning & budgeting

Note. Items contained four times within the table: Strategic Planning & Budgeting, Strategic Communications, Information Technology and Emergency Management; three times: Profession of Emergency Management, and a single time: Disaster warning systems and citizen response to warnings, Sociology of Homeland Security and Risk Communications.

Table 11 presents a consolidated list of the top 25 themes identified by the approaches described above (simple count, raw, scaled or probability scores) with aggregate counts/scores data. Twenty-nine educational themes ranked within the top 25 of the previous counts and scores tables. Provided in the table is the likelihood for an item to have been selected within each separate examination. A likelihood of 100% indicates that that item appeared in all of the top 25 counts of the previous tables/experiments. A likelihood of 20% indicates that an item was only selected in once in a single table/experiment.

Total Unduplicated Reach and Frequency

Total unduplicated reach and frequency analysis provides the ability to find a subset or a portfolio of the items examined, which would reach the widest audience or group of survey participants within the analysis with a greater frequency. The result of the TURF examination serves to identify that some of the educational themes which may not be the most popular overall, could provide broad appeal to a wider audience despite not having scored or having been selected as best or least worst items overall.

TURF First Choice Analysis

A TURF examination for first choice was conducted for the entire list of 87 items as educational themes, to develop five portfolios of 25 items overall that would have the greatest reach of first choice with a greater frequency within the survey population. Table 12 details those 25 items in five separate portfolios that had the greatest reach as a first choice frequency for the survey population of (n = 1,006). These first choices served as the top choice selections for (n = 978) individuals as analyzed through the Stepwise TURF + Swaps process, 978 /1,006 = 97.2% reach overall within the survey population.

Table 11

Consolidated Educational Themes

Rank	Item	Educational Theme	Likelihood on list (%)
1	7	Citizen and community disaster preparedness	100
2	39	Critical Infrastructure Protection	100
3	63	Critical Thinking	100
4	69	Decision-Making	100
5	5	Disaster planning and preparedness	100
6	10	Disaster relief and recovery	100
7	8	Disaster response and operations	100
8	80	Emergency Management	100
9	4	Emergency management skills	100
10	82	Exercises and Training	100
11	1	General emergency management	100
12	9	Hazard prevention and mitigation	100
13	71	Interagency Coordination	100
14	72	Leadership	100
15	34	Media, disasters and emergency management	100
16	57	Preparedness	100
17	26	Public administration and emergency management	100
18	32	Public health and emergency management	100
19	38	Risk Management and Analysis	100
20	60	Role of State and Local Governments	100
21	3	State and local emergency management	100
22	52	Strategic Planning & Budgeting	80
23	65	Strategic Communications	80
24	11	Information technology and emergency management	80
25	2	Profession of emergency management	60
26	78	Risk Communications	20
27	86	Role of Communities in Homeland Security	20
28	47	Sociology of Homeland Security	20
29	6	Disaster warning systems and citizen response to warnings	20

Table 12

TURF First Choice

	Portfolio				
	1	2	3	4	5
Item #	1	1	1	1	1
Item label	General emergency management	General emergency management	General emergency management	General emergency management	General emergency management
Item #	2	2	2	2	2
Item label	Profession of emergency management	Profession of emergency management	Profession of emergency management	Profession of emergency management	Profession of emergency management
Item #	3	3	3	3	3
Item label	State and local emergency management	State and local emergency management	State and local emergency management	State and local emergency management	State and local emergency management
Item #	4	4	4	4	4
Item label	Emergency management skills	Emergency management skills	Emergency management skills	Emergency management skills	Emergency management skills
Item #	5	5	5	5	5
Item label	Disaster planning and preparedness	Disaster planning and preparedness	Disaster planning and preparedness	Disaster planning and preparedness	Disaster planning and preparedness
Item #	7	7	7	7	7
Item label	Citizen and community disaster preparedness	Citizen and community disaster preparedness	Citizen and community disaster preparedness	Citizen and community disaster preparedness	Citizen and community disaster preparedness
Item #	8	8	8	8	8
Item label	Disaster response and operations	Disaster response and operations	Disaster response and operations	Disaster response and operations	Disaster response and operations
Item #	9	9	9	9	9
Item label	Hazard prevention and mitigation	Hazard prevention and mitigation	Hazard prevention and mitigation	Hazard prevention and mitigation	Hazard prevention and mitigation
Item #	20	20	20	20	20
Item label	National security and terrorism hazards	National security and terrorism hazards	National security and terrorism hazards	National security and terrorism hazards	National security and terrorism hazards

Table 12 continued

	Portfolio				
	1	2	3	4	5
Item #	26	26	26	26	26
Item label	Public administration and emergency management	Public administration and emergency management	Public administration and emergency management	Public administration and emergency management	Public administration and emergency management
Item #	34	34	34	37	37
Item label	Media, disasters and emergency management	Media, disasters and emergency management	Media, disasters and emergency management	Threats to the homeland	Threats to the homeland
Item #	37	37	37	38	38
Item label	Threats to the homeland	Threats to the homeland	Threats to the homeland	Risk management and analysis	Risk management and analysis
Item #	38	38	38	39	39
Item label	Risk management and analysis	Risk management and analysis	Risk management and analysis	Critical infrastructure protection	Critical infrastructure protection
Item #	39	39	39	45	45
Item label	Critical infrastructure protection	Critical infrastructure protection	Critical infrastructure protection	Overview of homeland security mission areas	Overview of homeland security mission areas
Item #	45	47	47	47	47
Item label	Overview of homeland security mission areas	Sociology of homeland security	Sociology of homeland security	Sociology of homeland security	Sociology of homeland security
Item #	47	50	52	50	52
Item label	Sociology of homeland security	Cyber security	Strategic planning & budgeting	Cyber security	Strategic planning & budgeting
Item #	57	57	57	57	57
Item label	Preparedness	Preparedness	Preparedness	Preparedness	Preparedness
Item #	60	60	60	60	60
Item label	Role of state and local governments	Role of state and local governments	Role of state and local governments	Role of state and local governments	Role of state and local governments

Table 12 continued

	Portfolio				
	1	2	3	4	5
Item #	63	63	63	63	63
Item label	Critical thinking	Critical thinking	Critical thinking	Critical thinking	Critical thinking
Item #	67	67	67	67	67
Item label	Basics of homeland security	Basics of homeland security	Basics of homeland security	Basics of homeland security	Basics of homeland security
Item #	69	69	69	69	69
Item label	Decision-making	Decision-making	Decision-making	Decision-making	Decision-making
Item #	71	71	71	71	71
Item label	Interagency coordination	Interagency coordination	Interagency coordination	Interagency coordination	Interagency coordination
Item #	72	72	72	72	72
Item label	Leadership	Leadership	Leadership	Leadership	Leadership
Item #	80	80	80	80	80
Item label	Emergency management	Emergency management	Emergency management	Emergency management	Emergency management
Item #	82	82	82	82	82
Item label	Exercises and training	Exercises and training	Exercises and training	Exercises and training	Exercises and training
Reach	978	978	978	978	978
% reached	97.2	97.2	97.2	97.2	97.2
f	978	978	978	978	978

Note. n = 1,006.

[a] For this column, the item label also refers to the educational theme.

A consolidation of the TURF first choice experiment from the five portfolios examined provides a total list of 27 items as educational themes with the greatest first choice reach for this run of the analysis. For the 27 items examined, 23 were found to have a likelihood of 100% to have appeared within each portfolio. The four remaining items appeared in only two (40%) or three (60%) of the portfolios. The top ranked items had the same amount of reach as they were the most popular educational themes within the study.

TURF 95% Threshold Analysis

Another way of conducting a TURF analysis involves the establishment of a threshold. For this analysis, a 95% threshold setting was prescribed, providing for a respondent being reached if the probability of choice for an item in the set examined exceeds 95%. Howell (2016) notes that unlike the TURF first choice analysis, the threshold provides for a good second choice, if again the likelihood for selection in this case is at 95% or above (see Table 13). Table 14 depicts the specified number of portfolios (5 in this case) having 25 items which exceeded the 95% threshold reaching 901 respondents (or 89.56% of the population) with an average frequency of 3,561 = (3,566 + 3,561 + 3,560 + 3,560 + 3,559) /5. The consistency in reach as with the first choice reinforces the popularity of many of the same educational themes seen within the prior examinations. This examination however demonstrates greater frequency in the reach.

Table 13

TURF First Choice Consolidated List

Rank	Item	Educational theme	Likelihood on list (%)
1	1	General emergency management	100
2	2	Profession of emergency management	100
3	3	State and local emergency management	100
4	4	Emergency management skills	100
5	5	Disaster planning and preparedness	100
6	7	Citizen and community disaster preparedness	100
7	8	Disaster response and operations	100
8	9	Hazard prevention and mitigation	100
9	20	National Security and terrorism hazards	100
10	26	Public administration and emergency management	100
11	37	Threats to the Homeland	100
12	38	Risk Management and Analysis	100
13	39	Critical Infrastructure Protection	100
14	47	Sociology of Homeland Security	100
15	57	Preparedness	100
16	60	Role of State and Local Governments	100
17	63	Critical Thinking	100
18	67	Basics of Homeland Security	100
19	69	Decision-Making	100
20	71	Interagency Coordination	100
21	72	Leadership	100
22	80	Emergency Management	100
23	82	Exercises and Training	100
24	34	Media, disasters and emergency management	60
25	45	Overview of Homeland Security Mission Areas	60
26	50	Cyber Security	40
27	52	Strategic Planning & Budgeting	40

Table 14

TURF Threshold 95%

	Portfolio				
	1	2	3	4	5
Item #	1	1	1	1	1
Item label[a]	General emergency management	General emergency management	General emergency management	General emergency management	General emergency management
Item #	2	2	2	2	2
Item label	Profession of emergency management	Profession of emergency management	Profession of emergency management	Profession of emergency management	Profession of emergency management
Item #	3	3	3	3	3
Item label	State and local emergency management	State and local emergency management	State and local emergency management	State and local emergency management	State and local emergency management
Item #	4	4	4	4	4
Item label	Emergency management skills	Emergency management skills	Emergency management skills	Emergency management skills	Emergency management skills
Item #	5	5	5	5	5
Item label	Disaster planning and preparedness	Disaster planning and preparedness	Disaster planning and preparedness	Disaster planning and preparedness	Disaster planning and preparedness
Item #	7	7	7	7	7
Item label	Citizen and community disaster preparedness	Citizen and community disaster preparedness	Citizen and community disaster preparedness	Citizen and community disaster preparedness	Citizen and community disaster preparedness
Item #	8	8	8	8	8
Item label	Disaster response and operations	Disaster response and operations	Disaster response and operations	Disaster response and operations	Disaster response and operations
Item #	9	9	9	9	9
Item label	Hazard prevention and mitigation	Hazard prevention and mitigation	Hazard prevention and mitigation	Hazard prevention and mitigation	Hazard prevention and mitigation
Item #	20	20	20	20	14
Item label	National Security and terrorism hazards	National Security and terrorism hazards	National Security and terrorism hazards	National Security and terrorism hazards	Earthquake, tsunami and geologic hazards

Table 14 continued

	Portfolio				
	1	2	3	4	5
Item #	26	26	26	26	20
Item label	Public administration and emergency management	Public administration and emergency management	Public administration and emergency management	Public administration and emergency management	National security and terrorism hazards
Item #	34	34	32	34	26
Item label	Media, disasters and emergency management	Media, disasters and emergency management	Public health and emergency management	Media, disasters and emergency management	Public administration and emergency management
Item #	37	37	34	37	34
Item label	Threats to the homeland	Threats to the homeland	Media, disasters and emergency management	Threats to the homeland	Media, disasters and emergency management
Item #	38	38	37	38	37
Item label	Risk management and analysis	Risk management and analysis	Threats to the homeland	Risk management and analysis	Threats to the homeland
Item #	39	39	38	39	38
Item label	Critical infrastructure protection	Critical infrastructure protection	Risk management and analysis	Critical infrastructure protection	Risk management and analysis
Item #	45	45	39	40	39
Item label	Overview of homeland security mission areas	Overview of homeland security mission areas	Critical infrastructure protection	Laws related to homeland security	Critical infrastructure protection
Item #	47	47	45	45	45
Item label	Sociology of homeland security	Sociology of homeland security	Overview of homeland security mission areas	Overview of homeland security mission areas	Overview of homeland security mission areas
Item #	57	50	47	47	47
Item label	Preparedness	Cyber security	Sociology of homeland security	Sociology of homeland security	Sociology of homeland security
Item #	60	57	57	57	57
Item label	Role of state and local governments	Preparedness	Preparedness	Preparedness	Preparedness

Table 14 continued

	Portfolio				
	1	2	3	4	5
Item # Item label	63 Critical thinking	60 Role of state and local governments	60 Role of state and local governments	60 Role of state and local governments	60 Role of state and local governments
Item # Item label	67 Basics of homeland security	63 Critical thinking	63 Critical thinking	63 Critical thinking	63 Critical thinking
Item # Item label	69 Decision-making	67 Basics of homeland security	67 Basics of homeland security	67 Basics of homeland security	67 Basics of homeland security
Item # Item label	72 Leadership	69 Decision-making	69 Decision-making	69 Decision-making	69 Decision-making
Item # Item label	80 Emergency management	72 Leadership	72 Leadership	72 Leadership	72 Leadership
Item # Item label	82 Exercises and training	80 Emergency management	80 Emergency management	80 Emergency management	80 Emergency management
Item # Item label	86 Role of communities in homeland security	82 Exercises and training	82 Exercises and training	82 Exercises and training	82 Exercises and training
Reach	901	901	901	901	901
% reached	89.56%	89.56%	89.56%	89.56%	89.56%
f	3,566	3,561	3,560	3,560	3,559

Note. n = 1,006.

[a] For this column, the item label also refers to the educational theme.

The consolidated TURF 95% threshold list (Table 15) from the five portfolios examined provides a list of 29 items in total. Each of the 901 individuals reached, (at the 95% threshold or above) were reached by the noted educational themes. For the 29 items examined in this case, 24 were found to have a 100% likelihood to have been selected within each examined portfolio. The five remaining items each appeared only a single time (20%) within the five portfolios. Each of the five items selected, once per portfolio had to have likewise reached the 95% threshold for selection by a respondent. The top ranked items in this examination, similar to the other examinations were, found to be the most popular educational themes within the study.

Consolidated Counts/Scores and TURF Analysis

A further consolidation of the previous three consolidation lists (Table 16) provides an educational theme comparison sorted by alphabetical order. Reviewing the consolidated lists, there is tremendous parity between the three lists and the educational themes selected. The educational themes selected remains consistent regardless of the analysis tool used in the experiment (scores/counts or TURF). Note there are more than 25 themes due to differences in top 25 ranks based on the different approaches. In instances where an experiment might have had a list that introduced a topic not seen in previous examinations, that topic was added to the lists below to ensure that the educational themes selected as part of each portfolio examined are included for further examination.

Table 15

TURF 95% Threshold Consolidated List

	Item	Educational theme	Likelihood on list (%)
1	1	General emergency management	100
2	2	Profession of emergency management	100
3	3	State and local emergency management	100
4	4	Emergency management skills	100
5	5	Disaster planning and preparedness	100
6	7	Citizen and community disaster preparedness	100
7	8	Disaster response and operations	100
8	9	Hazard prevention and mitigation	100
9	20	National Security and terrorism hazards	100
10	26	Public administration and emergency management	100
11	34	Media, disasters and emergency management	100
12	37	Threats to the Homeland	100
13	38	Risk Management and Analysis	100
14	39	Critical Infrastructure Protection	100
15	45	Overview of Homeland Security Mission Areas	100
16	47	Sociology of Homeland Security	100
17	57	Preparedness	100
18	60	Role of State and Local Governments	100
19	63	Critical Thinking	100
20	67	Basics of Homeland Security	100
21	69	Decision-Making	100
22	72	Leadership	100
23	80	Emergency Management	100
24	82	Exercises and Training	100
25	14	Earthquake, tsunami and geologic hazards	20
26	32	Public health and emergency management	20
27	40	Laws Related to Homeland Security	20
28	50	Cyber Security	20
29	60	Role of Communities in Homeland Security	20

Table 16

Consolidated Counts/Scores and TURF List

Item	Scores/counts	Item	TURF First Choice	Item	TURF 95% prob.
1	General emergency management	1	General emergency management	1	General emergency management
2	Profession of emergency management	2	Profession of emergency management	2	Profession of emergency management
3	State and local emergency management	3	State and local emergency management	3	State and local emergency management
4	Emergency management skills	4	Emergency management skills	4	Emergency management skills
5	Disaster planning and preparedness	5	Disaster planning and preparedness	5	Disaster planning and preparedness
6	Disaster warning systems and citizen response to warnings	7	Citizen and community disaster preparedness	7	Citizen and community disaster preparedness
7	Citizen and community disaster preparedness	8	Disaster response and operations	8	Disaster response and operations
8	Disaster response and operations	9	Hazard prevention and mitigation	9	Hazard prevention and mitigation
9	Hazard prevention and mitigation	20	National security and terrorism hazards	20	National security and terrorism hazards
10	Disaster relief and recovery	26	Public administration and emergency management	26	Public administration and emergency management
11	Information technology and emergency management	37	Threats to the homeland	34	Media, disasters and emergency management
26	Public administration and emergency management	38	Risk management and analysis	37	Threats to the homeland
32	Public health and emergency management	39	Critical infrastructure protection	38	Risk management and analysis
34	Media, disasters and emergency management	47	Sociology of homeland security	39	Critical infrastructure protection
38	Risk management and analysis	57	Preparedness	45	Overview of homeland security mission areas
39	Critical infrastructure protection	60	Role of state and local governments	47	Sociology of homeland security
47	Sociology of homeland security	63	Critical thinking	57	Preparedness
52	Strategic planning & budgeting	67	Basics of homeland security	60	Role of state and local governments
57	Preparedness	69	Decision-making	63	Critical thinking
60	Role of state and local governments	71	Interagency coordination	67	Basics of homeland security
63	Critical thinking	72	Leadership	69	Decision-making
65	Strategic communications	80	Emergency management	72	Leadership
69	Decision-making	82	Exercises and training	80	Emergency management

Table 16 continued

Item	Scores/counts	Item	TURF First Choice	Item	TURF 95% prob.
71	Interagency coordination	34	Media, disasters and emergency management	82	Exercises and training
72	Leadership	45	Overview of homeland security mission areas	14	Earthquake, tsunami and geologic hazards
78	Risk communications	50	Cyber security	32	Public health and emergency management
80	Emergency management	52	Strategic planning & budgeting	40	Laws related to homeland security
82	Exercises and training			50	Cyber security
86	Role of communities in homeland security			86	Role of communities in homeland security
	Homeland security centric topic = 3 total topics = 29 (homeland security content = 10.3%)		Homeland security centric topic = 7 total topics = 27 (homeland security content = 25.9%)		Homeland security centric topic = 9 total topics = 29 (homeland security content = 31%)

Examining the above table, many of the popular themes remain consistent between the approaches; however, there are some notable differences. Homeland Security related topics increase in the TURF first choice and TURF 95% threshold compared to the counts/scores. There are three homeland security related topics included in the counts/scores list, seven for the TURF first choice and nine for the TURF 95% threshold. Proportionally, this represents 10.3%, 25.9% and 31% of content for the three approaches respectively.

Summary

Data derived from the BWS and TURF experiments served to provide an ideal method in which to and evaluate the responses by the practitioners surveyed as part of the analysis. BWS as an analytical tool requires individuals to make a determined choice and select both a best and a worst choice when considering five separate items in an individual set. The choices that are made by a respondent provide a statistically reliable way to determine the aggregate level simple counts for the number of times an item was selected both as a best as well as a worst choice within and analysis. This data has also been demonstrated to be statistically reliable in determining the individual level discrimination through the use of the HB analysis utilizing the multinomial logit model. This data is in turn presented with a 95% confidence interval to provide an indication for the degree certainty for the estimate of each item's score.

The initial data collection provided a consolidated list of top 25 "best" themes derived from aggregate and individual level examinations. Taking into consideration the methodology in which the top educational themes were distilled from the five methods, there were a total of 29 themes identified (Table 17). The items that were identified through the use of these experiments were sorted by rank (preference). All five experiments bore similar results.

The second data collection effort used a TURF first choice experiment, developing five portfolios with 25 educational themes each. This examination was conducted to determine which educational themes and topics would have a wider reach to an expanded audience within the survey population. From the five portfolios that were developed, there were a total of 27 educational themes identified. The consolidated list of 27 items had the greatest first choice reach for this run of the analysis.

A TURF examination with a 95% threshold setting was conducted for the third portion of the examination. The 95% threshold setting provided for a respondent being reached if the probability of choice for an item in the set examined exceeds 95%. This examination expanded the analysis beyond the TURF first choice, allowing for a "good second choice" which would prove to allow for the inclusion of additional educational themes for the analysis. Two additional themes beyond the TURF first choice (27) for a total of 29 (TURF 95% threshold) were developed as a result of this examination.

The final examination conducted is a consolidated synthesis of the three examinations made (counts/scores, TURF first choice and TURF 95% threshold). This final consolidated list demonstrated consistency between many of the themes, although there were some subtle but significant changes in content, including an increase in homeland security centric themes from one examination to the next. The fewest homeland security themes found (three) in the analysis was with the counts/scores analysis which was a strict rank ordered list of those items determined most popular. The TURF first choice examination included seven homeland security themes out of a total of 27 educational themes in the examination. Finally, the TURF 95% threshold contained a total of nine homeland security themes out of 29 total educational themes within the examination.

Conclusion

The results from the previous examination provides a structured manner in which to investigate the workforce needs for an integrated homeland security and emergency baccalaureate program. In examining the HSEM practitioner survey results, it is evident that there is a great deal of agreement as to the HSEM educational needs of a program resulting from the results of the BWS and TURF analysis. The survey and research methodology also served to provide differing results as to the degree of integration for homeland security and emergency management education based upon the level of examination applied between simple counts, BWS and TURF.

Chapter 5

Conclusions and Recommendations

Summary of the Study

The purpose of this exploratory research was to examine what homeland security and emergency management (HSEM) educators and practitioners felt should serve as the core for an HSEM (4-year) baccalaureate degree. The responses framed a broader investigation about the workforce requirements of an HSEM enterprise, and how the requisite skills and topical knowledge can be delivered in a 4-year baccalaureate degree.

This examination started with a broad set of both homeland security and emergency education themes and quantitatively filtered them down into a single integrated list of themes. A total of n = 1,006 practitioners participated in the HSEM education survey from a total of n = 1,149 registrants. Likely due to a number of technical problems encountered in the survey registration process, separate from the survey itself, n = 143 registrants were dropped and noted as incompletes. A total of (n = 2,486) emails were sent to individuals working within the HSEM enterprise requesting their participation and further distribution of the survey registration for other practitioners to participate. As the email invitation process requested distribution beyond the individual addressed, the actual reach of the survey could not be determined.

The internet-based survey instructed respondents to select both a best and worst choice from each set of educational themes presented in sequential sets of five. The educational themes were drawn from a cumulative list of 87 topics derived from Bellavita and Gordon's (2006) 51 "educational themes" and Darlington's (1999) 36 "study areas." Each respondent who

successfully completed the survey viewed a total of 18 sets of five items through the course of the survey to provide for overall best and worst counts by educational theme.

Sawtooth's maxdiff analyzer was utilized to determine aggregate level scores of the educational themes based on simple counts for the total number of times a theme was selected best, worst or not at all within a given set. These counts then served as the basis for the individual level estimates (raw, rescaled and probability of choice) using Sawtooth's HB engine.

Additionally, further analysis using TURF was conducted to confirm and extend the reach of the individual estimates. The two separate TURF examinations involved a run involving "first choice" and another with a "95% threshold." The TURF first choice demonstrated the level of reach with the educational themes presented that were selected as a first choice by the survey respondents. The 95% threshold provided for a respondent being reached if the probability of choice for an item in the set examined exceeded 95%.

Aggregate and individual level results, as well as the result of the TURF analysis, were then compared and combined into a consolidated list. The list allowed for comparisons of the similarities and differences in outcomes and demonstrate the reach provided by several educational themes which were not the most popular overall, but were determined to have extended the reach of the themes to a wider audience within the practitioner based survey population.

This study is significant in part due to its scope: It is a large-scale examination of practitioners within the HSEM enterprise (n = 1,006) to provide feedback regarding the integrated HSEM baccalaureate needs of the workforce. The study is also significant in its quantifiable examination of HSEM education utilizing BWS and total unduplicated reach and frequency (TURF) as analytical tools.

Review of the Findings

The educational themes selected by practitioners to serve as the core for an HSEM baccalaureate program are displayed at Table 17. The educational themes listed were drawn from the final analysis in Chapter IV, resulting from the TURF 95% threshold. For the 29 education themes presented, 21 of the topics (highlighted) were common across all examinations, suggesting they were found to be favorable no matter the protocol in analysis used. The remaining educational themes displayed were found to be likewise favorable by survey respondents through the use of TURF in extending the themes to reach a wider audience. This experiment underscored the significance in using the BWS and TURF analysis in developing an integrated list of the educational themes.

Table 18 reports the 95% confidence interval upper and lower bounds for the individual level estimates (raw, rescaled and probability of choice scores). All of the scores as noted within the study fell within the 95% confidence interval providing for a high degree of statistical reliability within the survey results. The 95% confidence interval serves as an indication for the degree certainty for the estimate of each item's score. The interval as provided is computed by taking each item's mean, plus or minus 1.96 times its standard error where the standard error for each score is computed by dividing its standard deviation by the square root of the sample size. The 95% confidence interval is the band within which the population mean would fall 95% of the time if the survey were to be repeated multiple times. As is noted within the highlighted columns, the average individual estimates for the scores fell within the confidence interval in all instances.

Table 17

Cumulative HSEM Educational Themes List

#	Educational theme (item # in study)	Educational theme
1	5	Disaster planning and preparedness[a]
2	8	Disaster response and operations[a]
3	80	Emergency management[b]
4	3	State and local emergency management[a]
5	82	Exercises and training[b]
6	60	Role of state and local governments[b]
7	63	Critical thinking[b]
8	4	Emergency management skills[a]
9	57	Preparedness[b]
10	38	Risk management and analysis[b]
11	9	Hazard prevention and mitigation[a]
12	7	Citizen and community disaster preparedness[a]
13	26	Public administration and emergency management[a]
14	69	Decision-making[b]
15	72	Leadership[b]
16	1	General emergency management[a]
17	34	Media, disasters and emergency management[a]
18	39	Critical infrastructure protection[b]
19	32	Public health and emergency management[a]
20	2	Profession of emergency management[a]
21	47	Sociology of homeland security[b]
22	67	Basics of homeland security[b]
23	86	Role of communities in homeland security[b]
24	20	National security and terrorism hazards[a]
25	40	Laws related to homeland security[b]
26	50	Cyber security[b]
27	37	Threats to the homeland[b]
28	45	Overview of homeland security mission areas[b]
29	14	Earthquake, tsunami and geologic hazards[a]

Note. Highlighted themes were common to all previous examinations.

[a] Darlington educational theme

[b] Bellavita and Gordon educational theme

Table 18

95% Confidence Interval HSEM Educational Themes List

Item #	Educational theme	Raw scores			Rescaled scores			Probability of choice		
		95% hi	Avg	95% lo	95% hi	Avg	95% lo	95% hi	Avg	95% lo
5	Disaster planning and preparedness	4.11	4.02	3.94	3.08	3.05	3.02	88.98	88.12	87.26
8	Disaster response and operations	3.42	3.33	3.24	2.83	2.79	2.75	81.82	80.63	79.44
3	State and local emergency management	2.37	2.24	2.11	2.77	2.73	2.69	80.14	79.03	77.92
80	Emergency management	3.33	3.23	3.14	2.77	2.72	2.68	80.01	78.68	77.36
82	Exercises and training	3.07	2.98	2.89	2.68	2.64	2.60	77.73	76.42	75.11
60	Role of state and local governments	2.98	2.90	2.81	2.65	2.60	2.56	76.77	75.43	74.08
57	Preparedness	2.82	2.74	2.66	2.60	2.55	2.50	74.99	73.68	72.37
4	Emergency management skills	2.99	2.88	2.77	2.58	2.53	2.47	74.77	73.18	71.59
9	Hazard prevention and mitigation	2.60	2.52	2.45	2.49	2.45	2.41	72.26	70.97	69.67
38	Risk management and analysis	2.71	2.61	2.51	2.46	2.41	2.36	71.71	70.15	68.59
63	Critical thinking	3.03	2.89	2.74	2.46	2.39	2.33	71.44	69.53	67.62
7	Citizen and community disaster preparedness	2.61	2.51	2.41	2.41	2.36	2.30	69.74	68.09	66.44
26	Public administration and emergency management	2.58	2.46	2.33	2.33	2.27	2.21	68.05	66.19	64.34
69	Decision-making	2.50	2.38	2.26	2.31	2.24	2.18	67.21	65.37	63.54
72	Leadership	2.42	2.30	2.18	2.25	2.18	2.12	65.46	63.57	61.68
1	General emergency management	2.37	2.24	2.11	2.22	2.16	2.09	64.57	62.62	60.67
34	Media, disasters and emergency management	1.78	1.68	1.58	1.95	1.89	1.84	57.04	55.29	53.55
39	Critical infrastructure protection	1.68	1.61	1.54	1.95	1.90	1.85	55.78	54.35	52.92
32	Public health and emergency management	1.59	1.52	1.46	1.87	1.83	1.79	54.13	52.86	51.59
2	Profession of emergency management	1.26	1.11	0.97	1.66	1.59	1.52	48.69	46.58	44.47
86	Role of communities in homeland security	1.25	1.16	1.07	1.65	1.59	1.54	47.74	46.13	44.51
47	Sociology of homeland security	1.04	0.86	0.68	1.59	1.51	1.44	46.50	44.23	41.95
67	Basics of homeland security	1.01	0.90	0.79	1.54	1.47	1.41	44.48	42.66	40.83
20	National security and terrorism hazards	0.78	0.67	0.56	1.38	1.32	1.26	39.28	37.57	35.86
40	Laws related to homeland security	0.46	0.36	0.27	1.18	1.13	1.08	34.28	32.74	31.21
37	Threats to the homeland	0.32	0.20	0.08	1.17	1.10	1.04	33.14	31.38	29.62
50	Cyber security	0.41	0.33	0.24	1.14	1.09	1.04	32.56	31.07	29.58
45	Overview of homeland security mission areas	-0.29	-0.42	-0.55	0.93	0.88	0.82	27.04	25.36	23.69
14	Earthquake, tsunami and geologic hazards	-1.54	-1.63	-1.72	0.37	0.34	0.31	10.34	9.57	8.79

Conclusions

Due to the exploratory nature of this study, the review of the literature provided little support for a cohesive hypothesis concerning the expected outcome. The examination itself, however, provided a robust and remarkably consistent set of themes identified as best meeting HSEM workforce needs that included both aspects and themes of homeland security as well as emergency management. Considering the number of emergency managers to have participated in this study as noted in Chapter IV, (54.7% /*n* = 548), the implications for the survey results note the importance of integrating various aspects of both homeland security and emergency management themes within a baccalaureate program. By extending the survey results beyond what was noted as most popular by using BWS, the TURF analysis demonstrates that there is a noted importance for homeland security themes as seen in Table 17.

Consolidated Counts; Scores and TURF List

Drabek (2007) had previously explored issues related to the integration of homeland security and emergency management curricula. Describing the disparate but comingled origins of emergency management and homeland security, Drabek recognized and attempted to explain the philosophical differences between the two domains. Drabek noted how the evolution of organizations, such as FEMA and DHS, established to address the coordination requirements for managing events of national significance, had shaped homeland security and emergency management as both separate and combined practices. Drabek note that as professions evolve it is inevitable that priorities for the content in related educational programs to evolve as well. Not surprisingly coinciding with these changes in the professional practice of HSEM, the role and expectations of emergency management and homeland security education has changed over the years.

McCreight (2009) also recognized the significant hurdles to the integration of homeland security and emergency management education. He noted that beyond the obvious "reconciliation" of homeland security and emergency management as professions, that debate still exists even as to the emphasis on risk versus crisis management within a curriculum. To overcome this biased emphasis, he notes that a curriculum should be built in a manner to bridge differences and provide for a balance in course work to prepare individuals to serve for either a "career in DHS or a related agency, as well as equipping them to serve as a state or local emergency manager" (p. 2). From a scan of collegiate programs, he notes that the current educational offerings are inadequate in preparing individuals for future requirements, he recommends further inquiry into how programs might be best "redesigned and configured" to best prepare future professionals. McCreight also provides an interesting insight when it comes to navigating the "academic minefield of crossing sometimes sacrosanct departmental boundaries" (p. 3), implying the need for continued emphasis within academia to create the needed interdisciplinary framework for future educational endeavors.

Donahue, Cunniony, Balabanz, and Sochats, (2010) addressed one of the challenges posed by McCreight—the continuing divided between professional homeland security and emergency management organizations. They note that many states have already taken steps to centralize activities for both homeland security and emergency management at the local and state levels. They advocate "all homeland security and emergency management disciplines share a common core" (p. 7). Beyond this common core, the "differentiation" process comes into play when considering the more specific or specialized needs that may develop to meet the needs of practical application.

Kiltz (2011) illustrates that the "homeland security enterprise" envisioned by the 2010 *Quadrennial Homeland Security Review (QHSR)* encompasses not just homeland security but emergency management as well. This view of a homeland security enterprise, she notes, is consistent with one of Bellavita and Gordon's (2006) definitions provided which emphasizes a dual purpose to provide for both traditional homeland security while accounting for an all hazards and preparedness approach. With this definition as a foundation, Kiltz opines that the challenge of integration for homeland security and emergency management must be overcome. As emergency management education programs have grown, so too have those emphasizing homeland security. She argues (2012) that collaboration must extend beyond both homeland security and emergency management centric programs and further integrate other disciplines if it is to reflect the needs and complexities of the homeland security enterprise.

Implications

The results of this study serve to provide a professional consensus as to the core education needed by practitioners within an integrated HSEM baccalaureate program. Due to the continued emphasis by several scholars regarding the need an importance of an integrated program, (Drabek, 2007; Kiltz, 2011, 2012; McCreight, 2009), this study supports the narrative they provide to demonstrate the need for integration by practitioners in the field. Noting the lack of "practitioner and academic consensus" on this topic (McCreight, 2009, p. 4), this study can serve to provide the increased visibility and understanding for the need for integration in both communities.

A potential strength provided by this study was the population size which provided for more than three times the number of respondents required for robust qualitative results (Orme, 2010). As the statistical sufficiency for achieving either an investigational or hypothesis

development can be found in as few as 30 to 60 responses, the large population served to provide a broad number of perspectives simply in rote numbers.

The use of BWS likewise has implications for use in not only this study, but with future studies as well. Respondent feedback regarding the survey indicated that there many who were unfamiliar with the use of the analytical and the requirement to have a fixed best and worst selection for each set of items examined. Others felt more comfortable with the process and indicated that forced best/worst selections was ideal in forcing them to make determined decisions as to what was desirable /undesirable as an educational theme. The use of BWS provided an additional research tool which sidesteps recognized issues related to use of traditional, scale-based survey instruments (Cohen, 2003).

Problems encountered during the registration process used to document participants before entering the survey had obvious implications between the number of individuals approached and those who were permitted to participate within the survey. In managing a process for an online survey that captures respondent specific registration information, separate and distinct from the survey tool, a web hosting service with greater reliability needs to be employed.

Recommendations

The HSEM core education survey utilized a total of 87 separate items comprised of Bellavita and Gordon's (2006) 51 "educational themes" and Darlington's (1999) 36 "study areas." These combined themes served to provide for a broad and extended range of educational themes for survey respondents to examine. The extensiveness of this list ensured that a diverse number of themes across the homeland security and emergency management enterprise could be

examined as potential educational themes which could be considered as significant to serve as the core themes.

Considering that the composition of the 87 themes were derived from previous examinations of courses and content offered by institutions of higher education offering emergency management (Darlington, 1999) and homeland security (Bellavita & Gordon, 2006) education. In this sense, this research builds upon the cumulative efforts of previous works focused on HSEM education. Future examinations to further develop a defined core curriculum should examine evolving or emerging topics of concerns which may influence the needs of HSEM practitioners in the future. A potential topic of interest for example that may warrant further examination could be climate change and its numerous consequences for both emergency managers and homeland security professionals.

Based upon this examination and the defined outcomes integrating both homeland security and emergency management education at the undergraduate level, future research and emphasis should be placed on the ideal level of integration between the two. While the results of the survey serve to provide the backdrop for what practitioners felt was needed for an undergraduate program consisting of HSEM undergraduate education in the workplace, the list of 29 themes in total is too large a group (in single subject form) to be included within a program. Narrowing the number of themes to a defined curriculum which would be more universal in nature would prove more useful as a program basis than the current integrated list.

An extension to the narrowing could be the further integration of educational themes as provided in the current list, into other educational themes within the list. Kiltz (2009) develops the topic of integrating critical thinking into the educational curriculum for both homeland security and emergency management to develop a manner in which not only the topic can be

taught, but evaluated as well. As critical thinking (Educational Theme or item # 63) is a stand-alone topic within the current list of educational themes, its integration into a curriculum would serve not only to support instructional and evaluation aspects as advocated by Kiltz, but serve to narrow this list to a more concise set of educational themes. This concept could be extended to a wider number of topics which likewise might be better served as a result of being embedded in a wider portion of the educational themes rather than as a stand-alone course offering.

Reflecting on the discourse for the development of program standards to support homeland security and emergency management education (Donahue et al., 2010; Drabek, 2007; Kiltz, 2011, 2012; McCreight, 2009) further research should be dedicated to standards and the body responsible for this. A broader consideration should be provided to the integration of both practitioners and academics to the resolve this issue. McCreight (2009) rightly acknowledges the lack of operational background and experience for those looked to provide quality education while Donahue et al. (2010) argues to the contrary that academia should serve the role of developing and delivering this knowledge. Only through the development of integrated practices between homeland security and emergency management practitioners and scholars will successful and sustained development of integrated HSEM programs occur.

Recommendations from this study include further examination as to the degree of integration between homeland security and emergency management education within a 4-year undergraduate degree. Further efforts should also focus on the development of standards for integrated HSEM education programs and forums which serve to better assure the integration and information sharing between academics and practitioners. The future safety and security concerns of our nation will be better addressed as a result of a fully integrated homeland security and emergency management enterprise.

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Appendix A

McEntire's Paradigm of Disciplines and Vulnerability

Discipline	View(s) of Vulnerability	Recommendation(s)
Geography	Vulnerability is determined by the use of hazard-prone areas	Land-use planning that takes into account hazards to reduce risk
Meteorology	Vulnerability is due to a lack of advanced warning of severe weather	Acquisition, creation and effective use of warning systems
Engineering	Vulnerability occurs when structures and infrastructure cannot withstand the forces of hazards	Design and construction of buildings and infrastructure that promotes disaster resistance
Anthropology	Vulnerability emanates from constraining values, attitudes and practices	Alter attitudes to discourage risk-taking practices and susceptibility
Economics	Vulnerability is related to poverty and results in an inability to prevent, prepare for or recover from a disaster	Improve the distribution of wealth and purchase insurance to minimize losses and promote resilience
Sociology	Vulnerability is a product of inaccurate assumptions about disaster behavior and is related to race, gender, age, disability, etc.	Understand behavioral patterns in disasters and pay attention to needs of special populations
Psychology	Vulnerability is a function of overlooking or minimizing risk and not being able to cope emotionally with stress and/or loss	Help people to recognize risk and provide crisis counseling to enable resilience
Epidemiology	Vulnerability is susceptibility to disease or injury and is related to malnutrition and other health factors	Improve provision of public health/emergency medical care before, during and after disasters
Environmental Science	Vulnerability is proneness to environmental degradation, which may change weather patterns and produce long-term disasters	Conserve natural resources, protect green space areas, and ensure that debris management is performed in an environmentally conscious manner
Political Science	Vulnerability is produced by the political structure and incorrect decision making	Alter structure of political system and educate politicians and legislators about disasters
Public Administration	Vulnerability results from misguided laws, the failure to implement policies effectively, and an inability to enforce regulations	Strengthen response and recovery capabilities through preparedness measures, improved policy implementation and increased code enforcement
Law	Vulnerability results from negligence, which is a failure to act as reason or legal statutes dictate	Understand the law, alter statutes, and ensure compliance to widely accepted ethical practices in emergency management
Journalism	Vulnerability is a result of insufficient public awareness about hazards and how to respond to disasters	Dispel myths about disasters, foster increased media capabilities, and educate the public about hazards
Emergency Management	Vulnerability is the lack of capacity to perform important functions before and after disaster strikes (e.g., evacuation, search and rescue, public information, etc.)	Foster public awareness about disasters and build capacities through hazard and vulnerability analyses, resource acquisition, planning, training and exercises
Homeland Security	Vulnerability is due to cultural misunderstandings, permeable borders and fragile infrastructure, and weak disaster management institutions	Correct domestic and foreign policy mistakes, enhance counter-terrorism measures, protect borders and infrastructure, and improve WMD capabilities

Reproduced from McEntire, D. A. (2003). Searching for a holistic paradigm and policy guide. *International Journal of Emergency Management*, *1*(3), 298–308.

Appendix B

Cwiak Comparison

	Competencies (2009)	Knowledge, Skills and Abilities (2008)
1	Communication -verbal & written (43%)	Comprehensive EM, overall knowledge of field, 4 phases, all-hazards (36%)
2	Comprehensive EM, knowledge of best practices in the field (40%)	Communication - verbal & written (30%)
3	Government role, interaction, political and bureaucratic context (33 %)	Relationships, partnering, teambuilding (28%)
4	Critical thinking & problem-solving (31%)	Critical thinking, analytical skills, problem-solving (26%)
5	Leadership (28%)	Management skills (19%)
6	Management (24%)	Leadership (15%)
7	Risk assessment, analysis & management (23%)	Risk assessment, analysis & management (15%)
8	Collaboration, teambuilding, teamwork (21%)	Technology Skills (13%)
9	Planning (19%)	Planning Skills (13%)
10	Operational frameworks – NIMS/ICS/EOC operations (19%)	Knowledge of the social science research and ability to apply it in practice (13%)
11	Technology (13%)	Mitigation (11%)
12	Financial operations, contract administration, grant writing (13%)	Coordination (9%)
13	Ethics, professionalism (12%)	Professionalism, ethics, evolution as discipline and career (9%)
14	Vulnerability approach (10%)	Public policy (9%)
15	Legal matters (9%)	Political context (9%)

Reproduced from Cwiak, What Should Emergency Management Graduates Know? (Table 1) Journal of Homeland Security and Emergency Management Vol 8, Issue 2, 2011.

Appendix C

Emergency Management and Homeland Security Curriculum Fundamentals

- Crisis and Emergency Management Issues and Fundamentals
- Risk, Vulnerability and Capability Assessment Methods
- Planning and Operations in Crisis and Emergency Management
- All-Hazards Readiness and Emergency Management Functions
- Strategies for Infrastructure Protection and Preparedness
- Homeland Security Policies, Principles, Procedures and Plans
- Planning for WMD and Mass Casualty Crises: Key Issues
- Crisis and Emergency Response and Recovery Issues
- Mitigation and Preparedness Issues for Emergency Managers
- Integrating Intelligence and Threat Analysis in Homeland Security
- Public-Private Collaboration in Emergency Management
- Exercise Design and Coordination Principles

Reproduced from McCreight, R. (2009). Emergency management and homeland security curriculum Fundamentals. *Journal of Homeland Security and Emergency Management*, *6*(1).

Appendix D

Alignment of Workshop Core Common Areas with HSDEC Recommended Content Areas and DoD Competencies

HSDEC Content Areas	Workshop Core Common Areas	DoD Core Competencies
Content Area 1 Current and Emerging Threats	Historical aspects of domestic incidents	Critical expertise
	Human factors and psychology of domestic incidents, sociology, needs of people (resiliency)	Cultural Awareness
	Understand and identify characteristics of domestic threats (manmade and natural; accidental and purposeful) and hazards (chemical, biological, natural, terrorism, domestic threats, etc.)	Risk Management
Content Area 2 Context and Organization	Policy, roles, and responsibilities at National, Tribal, State and Local organizational levels (including preparation, preparedness/ protection, response, and recovery)	Critical expertise
	Policy, roles, and responsibilities of non-profits, volunteers, and private sectors (within crisis continuum preparation, preparedness/ protection, response, and recovery)	Critical expertise
	Common language, understand and learn acronyms, TEN code common terms, Homeland Security terminology	Communication
	Role of military in domestic incidents	Critical expertise Crisis Management
Content Area 3 Policies, Strategies, Legal Issues	Core focus on state and local level structures	Critical expertise
	Legal aspects of domestic incidents	Ethics
Content Area 4 Processes and Management	Common national plan and emergency systems (National Response Framework (NRF) and National Incident Management System (NIMS))	Collaboration
	Border and transportation security	Critical expertise
	Infrastructure protection, critical infrastructure and impact on homeland functions	Science and Technology Expertise
	Understand and identify assets for use in domestic incidents	Management and Planning Skills
Content Area 5 Practical Application	Leadership in crisis situations from the local, state, tribal, and federal levels (communication with the public)	Strategic Leadership
	Exercises, training, practicum as part of course (Table Top Exercise, training scenario, vignette-based practical exercise)	Adaptability Creative and Critical Thinking

Reproduced from Polson, C. J., Persyn, J., & Cupp, O. S. (2010), Partnership in Progress: A Model for Development of a Homeland Security Graduate Degree Program, *Homeland Security Affairs*, *6*(2), 1–25.

Appendix E

Drabek's Inventory

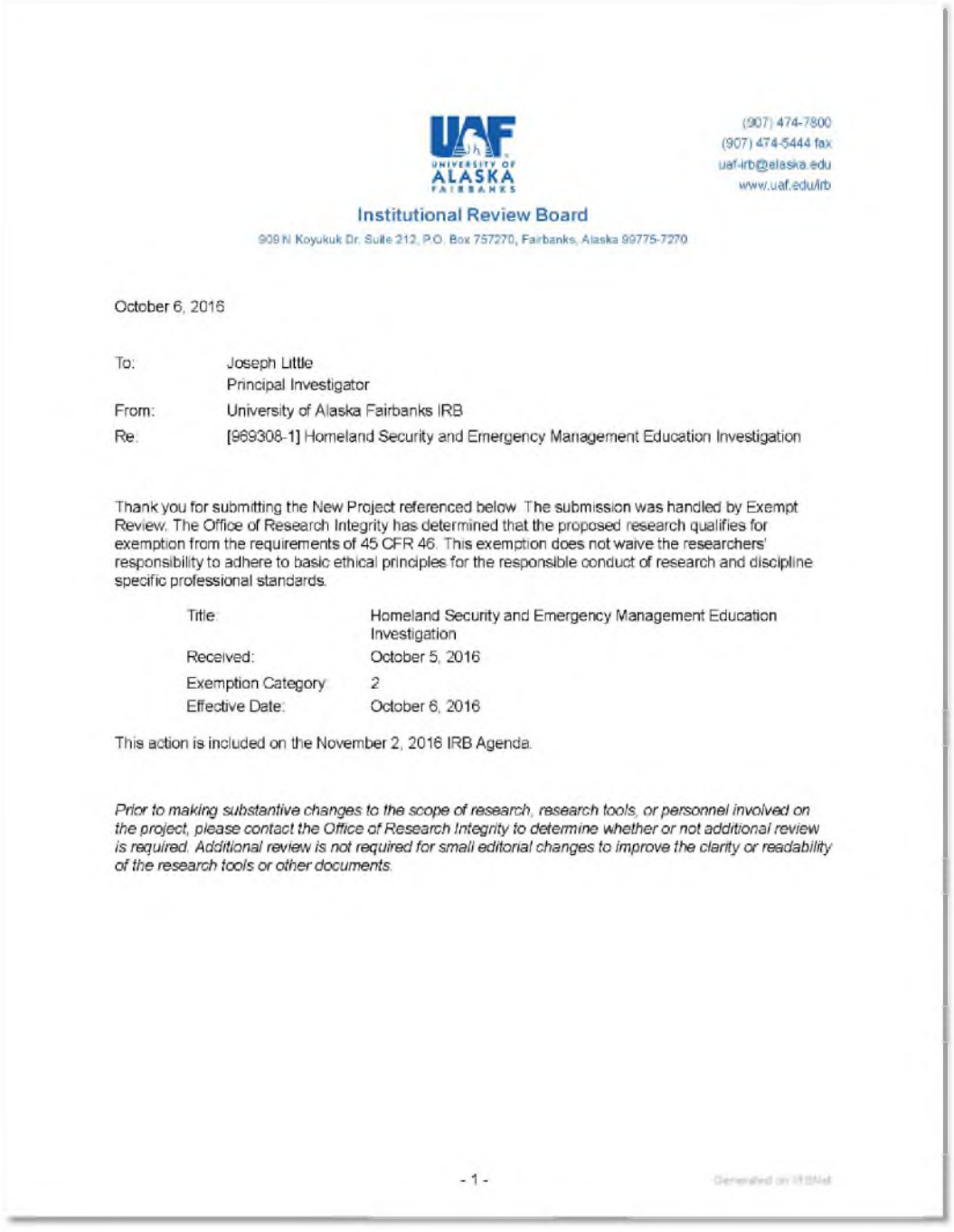
Table 1-1. Typology of system responses to disaster.

	System level					
Disaster phase	Individual	Group	Organizational	Community	Society	International
Preparedness						
Planning	IA	IIA	IIIA	IVA	VA	VIA
Warning	IB	IIB	IIIB	IVB	VB	VIB
Response						
Pre-impact mobilization	IC	IIC	IIIC	IVC	VC	VIC
Post-impact emergency actions	ID	IID	IIID	IVD	VD	VID
Recovery						
Restoration (6 mos. or less)	IE	IIE	IIIE	IVE	VE	VIE
Reconstruction (6 mos. or more)	IF	IIF	IIIF	IVF	VF	VIF
Mitigation						
Hazard perceptions	IG	IIG	IIIG	IVG	VG	VIG
Adjustments	IH	IIH	IIIH	IVH	VH	VIH

Reproduced from Drabek, T. E. (1986), *Human System Responses to Disaster: An Inventory of Sociological Findings*, Table 1.1, p. 11.

Appendix F

Institutional Review Board Approval



(907) 474-7800
(907) 474-5444 fax
uaf-irb@alaska.edu
www.uaf.edu/irb

Institutional Review Board
909 N Koyukuk Dr. Suite 212, P.O. Box 757270, Fairbanks, Alaska 99775-7270

October 6, 2016

To: Joseph Little
Principal Investigator

From: University of Alaska Fairbanks IRB

Re: [969308-1] Homeland Security and Emergency Management Education Investigation

Thank you for submitting the New Project referenced below. The submission was handled by Exempt Review. The Office of Research Integrity has determined that the proposed research qualifies for exemption from the requirements of 45 CFR 46. This exemption does not waive the researchers' responsibility to adhere to basic ethical principles for the responsible conduct of research and discipline specific professional standards.

Title:	Homeland Security and Emergency Management Education Investigation
Received:	October 5, 2016
Exemption Category:	2
Effective Date:	October 6, 2016

This action is included on the November 2, 2016 IRB Agenda.

Prior to making substantive changes to the scope of research, research tools, or personnel involved on the project, please contact the Office of Research Integrity to determine whether or not additional review is required. Additional review is not required for small editorial changes to improve the clarity or readability of the research tools or other documents.

Appendix G

Bellavita and Gordon's (2006) and Darlington's (1999) Cumulative List of Themes

1. Threats to the Homeland
2. Risk Management and Analysis
3. Critical Infrastructure Protection
4. Laws Related to Homeland Security
5. Homeland Security Policies & Strategies
6. Responses to Terrorism
7. Terrorism
8. Intelligence
9. Overview of Homeland Security Mission Areas
10. Organization of Homeland Security
11. Sociology of Homeland Security
12. Systems Integration and Administration of Homeland Security
13. Border Security
14. Cyber Security
15. History of Homeland Security and Terrorism
16. Strategic Planning & Budgeting
17. Civilian & Military Relationships
18. Comparative & International Homeland Security
19. Federal Role in Homeland Security
20. Future of Homeland Security
21. Preparedness

22. Private Sector Role in Homeland Security

23. Public Health & Medical Issues

24. Role of State and Local Governments

25. Homeland Security Technology

26. Weapons of Mass Destruction

27. Critical Thinking

28. Federalism

29. Strategic Communications

30. Transportation Security

31. Basics of Homeland Security

32. Civil Liberties

33. Decision-Making

34. Ethical Issues

35. Interagency Coordination

36. Leadership

37. Media

38. Politics of Homeland Security

39. Prevention of Terrorism

40. Psychology of Homeland Security

41. Recovery After an Attack

42. Risk Communications

43. Utilities and Industrial Facilities Security

44. Emergency Management

45. Engineering

46. Exercises and Training

47. Geospatial Dimensions of Homeland Security

48. Human Resource Management

49. Modeling & Simulation

50. Role of Communities in Homeland Security

51. Role of Individuals in Homeland Security

Darlington (*The Profession of Emergency Management: Education Opportunities and Gaps*)

52. General emergency management

53. Profession of emergency management

54. State and local emergency management

55. Emergency management skills

56. Disaster planning and preparedness

57. Disaster warning systems and citizen response to warnings

58. Citizen and community disaster preparedness

59. Disaster response and operations

60. Hazard prevention and mitigation

61. Disaster relief and recovery

62. Information technology and emergency management

63. Biological, toxic agents and epidemic hazards

64. Business and industry crisis and accident management

65. Earthquake, tsunami and geologic hazards

66. Floods, flash floods and dam failure

67. Forest fire, wildfire and conflagration

68. Hazardous materials

69. Hurricanes, cyclones, typhoons and coastal erosion

70. Landslide, mudslide, and rockslide

71. National Security and terrorism hazards

72. Nuclear power plant hazards

73. Thunderstorm, lightning, and tornado

74. Transportation accidents

75. Volcano

76. Winter and snow storms, blizzards, avalanches

77. Public administration and emergency management

78. Sociology of disasters

79. Political aspects of disasters

80. Economic aspects of disasters

81. Research methods and analysis

82. Fire community and emergency management

83. Public health and emergency management

84. Ethics and emergency management

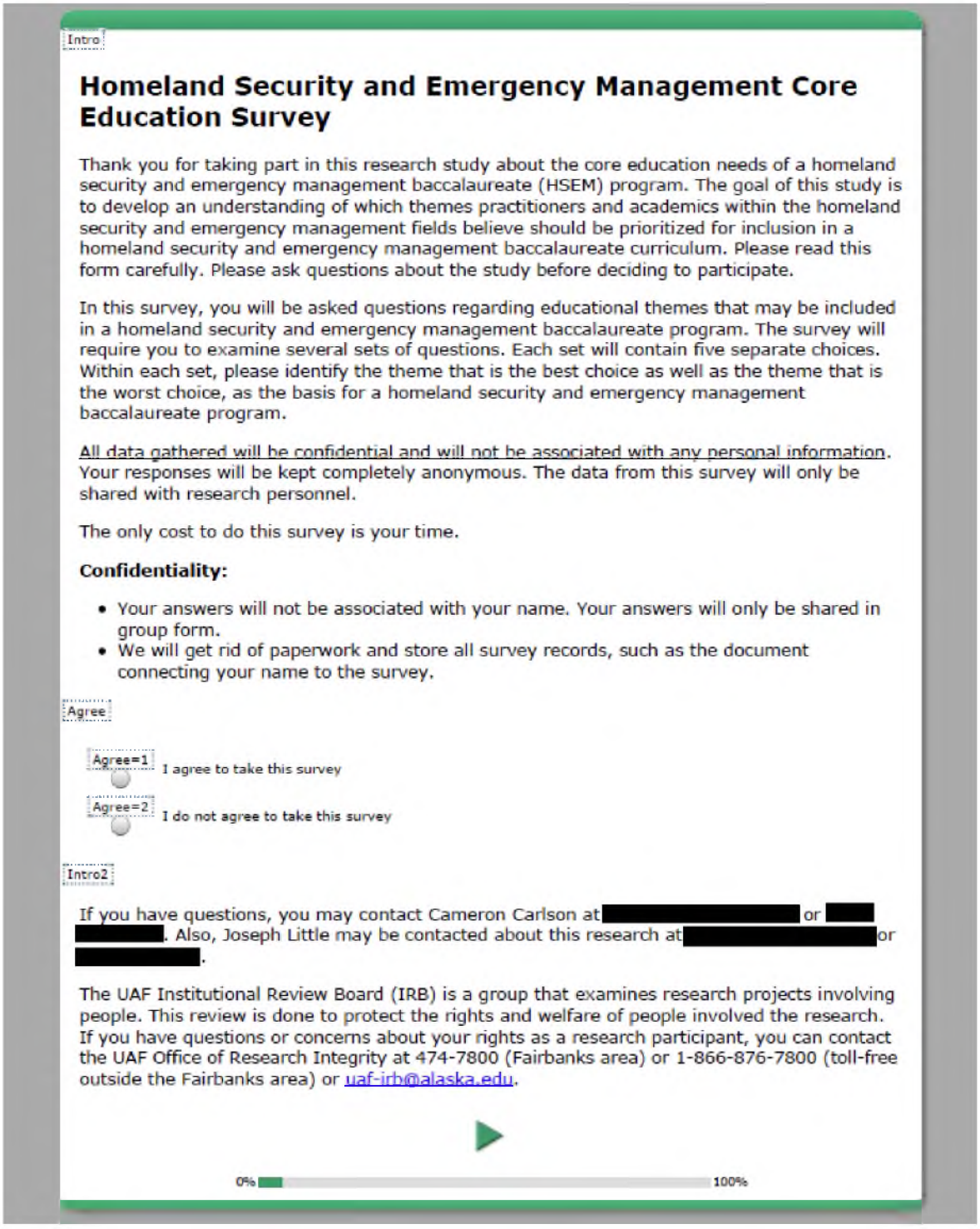
85. Media, disasters and emergency management

86. Legal issues in emergency management

87. Psychological Dimensions of disaster

Appendix H

Sample Survey



Intro

Homeland Security and Emergency Management Core Education Survey

Thank you for taking part in this research study about the core education needs of a homeland security and emergency management baccalaureate (HSEM) program. The goal of this study is to develop an understanding of which themes practitioners and academics within the homeland security and emergency management fields believe should be prioritized for inclusion in a homeland security and emergency management baccalaureate curriculum. Please read this form carefully. Please ask questions about the study before deciding to participate.

In this survey, you will be asked questions regarding educational themes that may be included in a homeland security and emergency management baccalaureate program. The survey will require you to examine several sets of questions. Each set will contain five separate choices. Within each set, please identify the theme that is the best choice as well as the theme that is the worst choice, as the basis for a homeland security and emergency management baccalaureate program.

All data gathered will be confidential and will not be associated with any personal information. Your responses will be kept completely anonymous. The data from this survey will only be shared with research personnel.

The only cost to do this survey is your time.

Confidentiality:

- Your answers will not be associated with your name. Your answers will only be shared in group form.
- We will get rid of paperwork and store all survey records, such as the document connecting your name to the survey.

Agree

Agree=1 I agree to take this survey

Agree=2 I do not agree to take this survey

Intro2

If you have questions, you may contact Cameron Carlson at [redacted] or [redacted]. Also, Joseph Little may be contacted about this research at [redacted] or [redacted].

The UAF Institutional Review Board (IRB) is a group that examines research projects involving people. This review is done to protect the rights and welfare of people involved the research. If you have questions or concerns about your rights as a research participant, you can contact the UAF Office of Research Integrity at 474-7800 (Fairbanks area) or 1-866-876-7800 (toll-free outside the Fairbanks area) or uaf-irb@alaska.edu.

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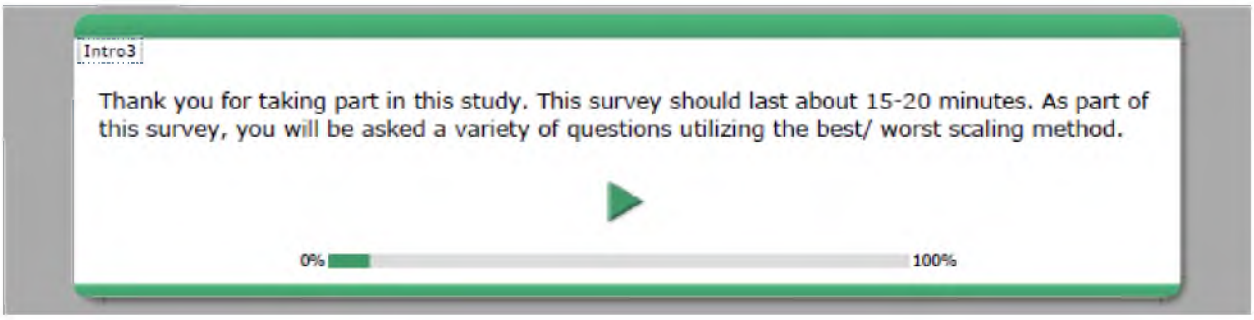
Intro3
Thank you for taking part in this study. This survey should last about 15-20 minutes. As part of this survey, you will be asked a variety of questions utilizing the best/ worst scaling method.
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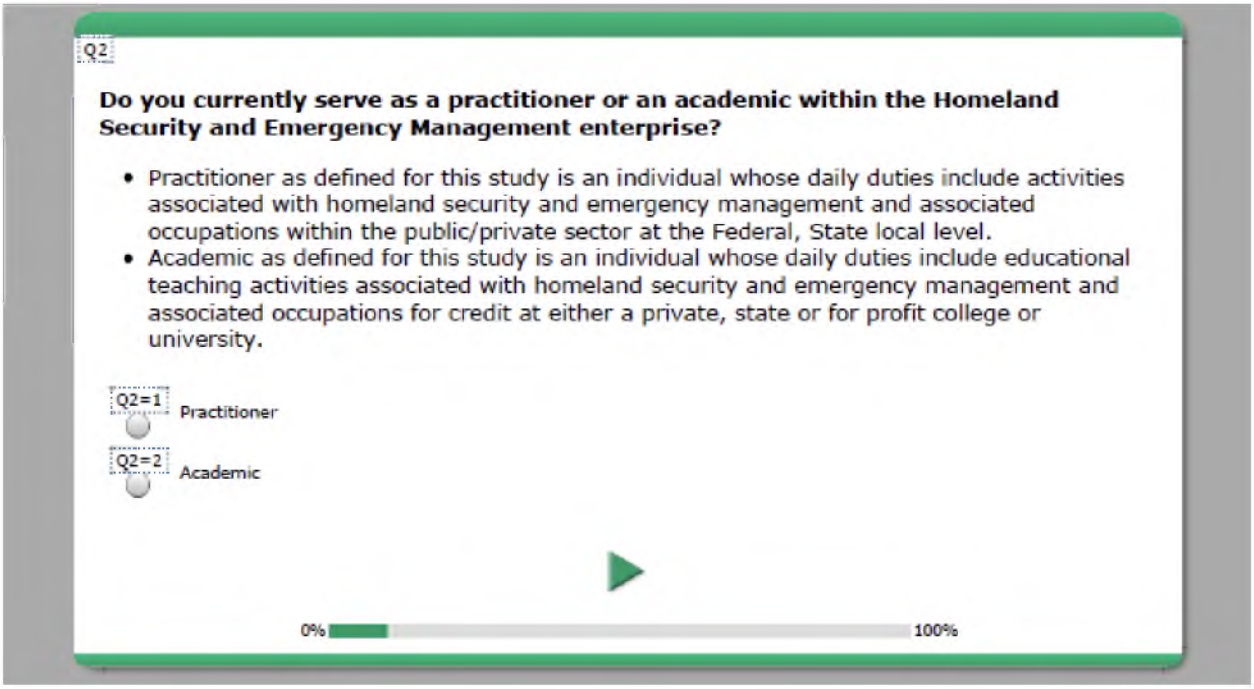
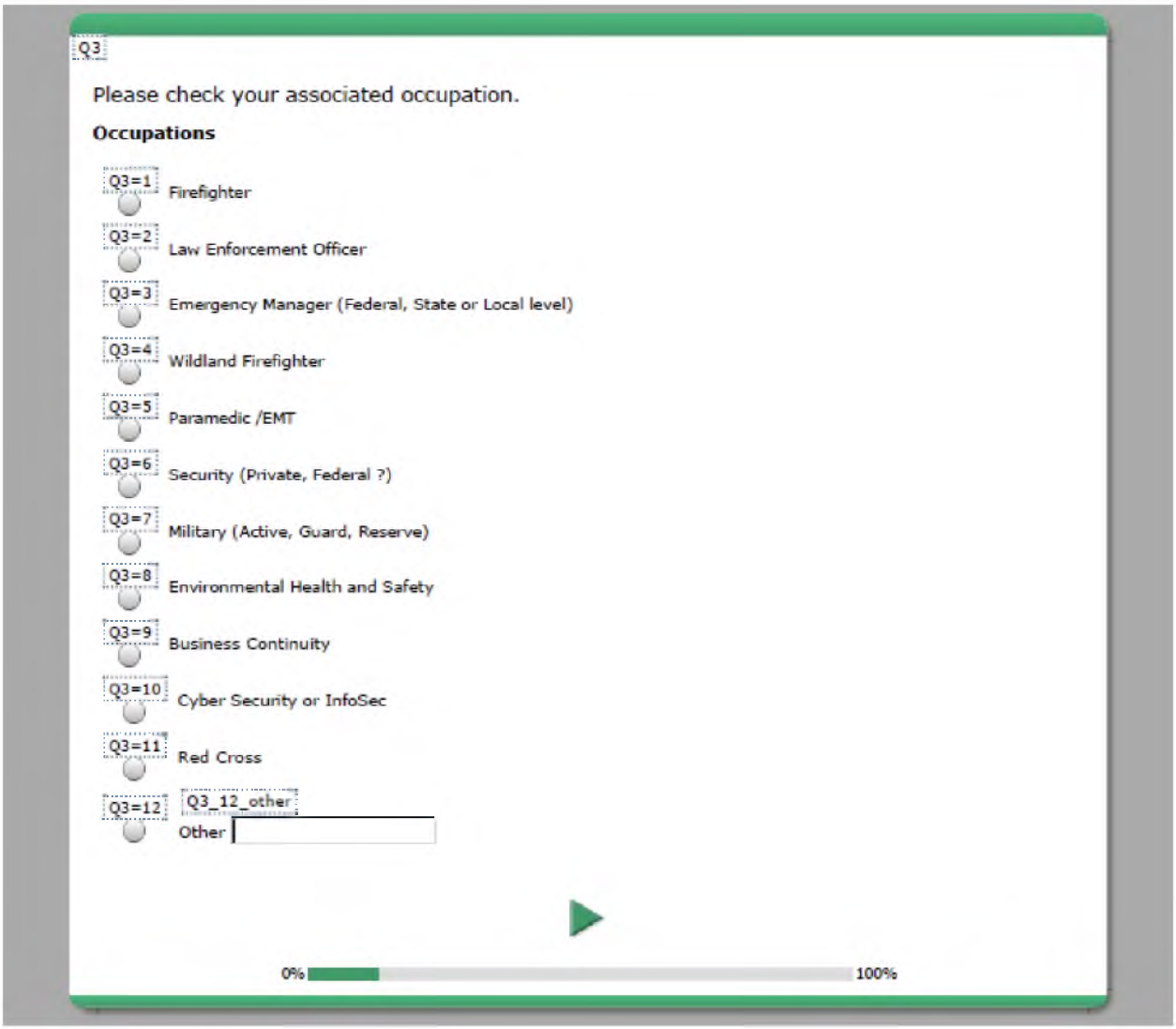
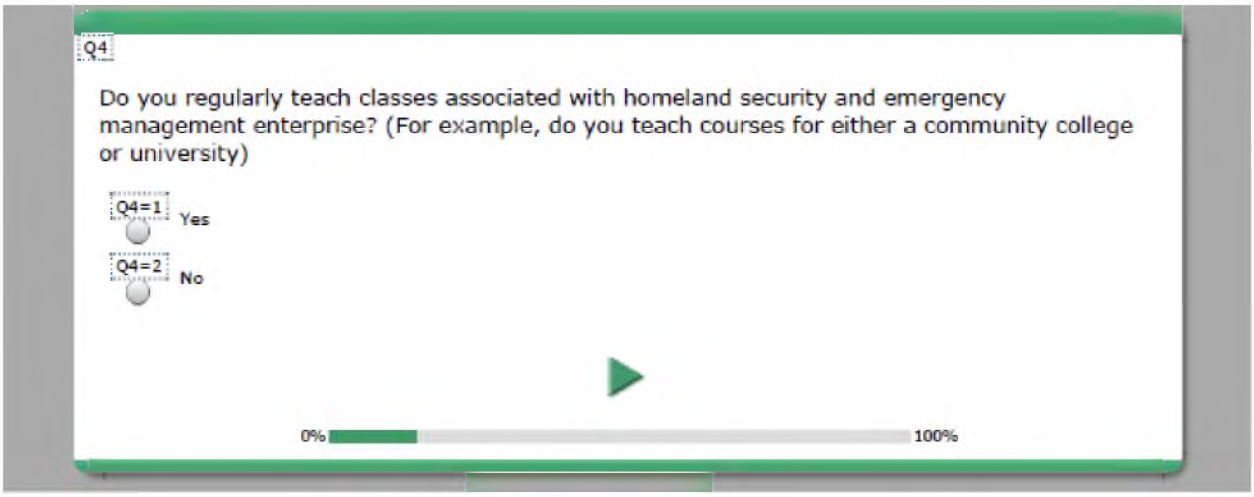
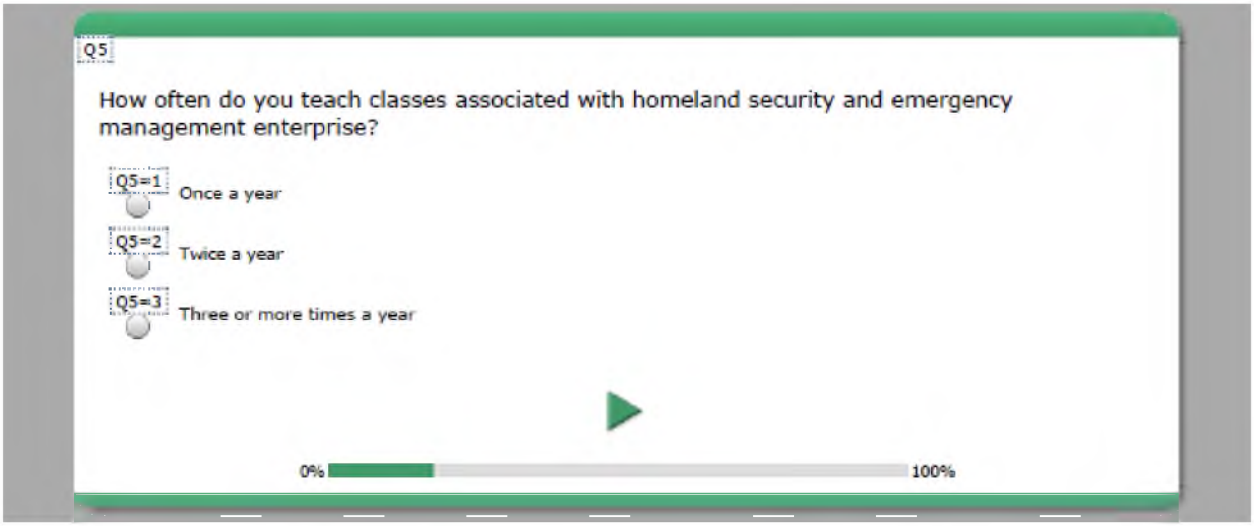
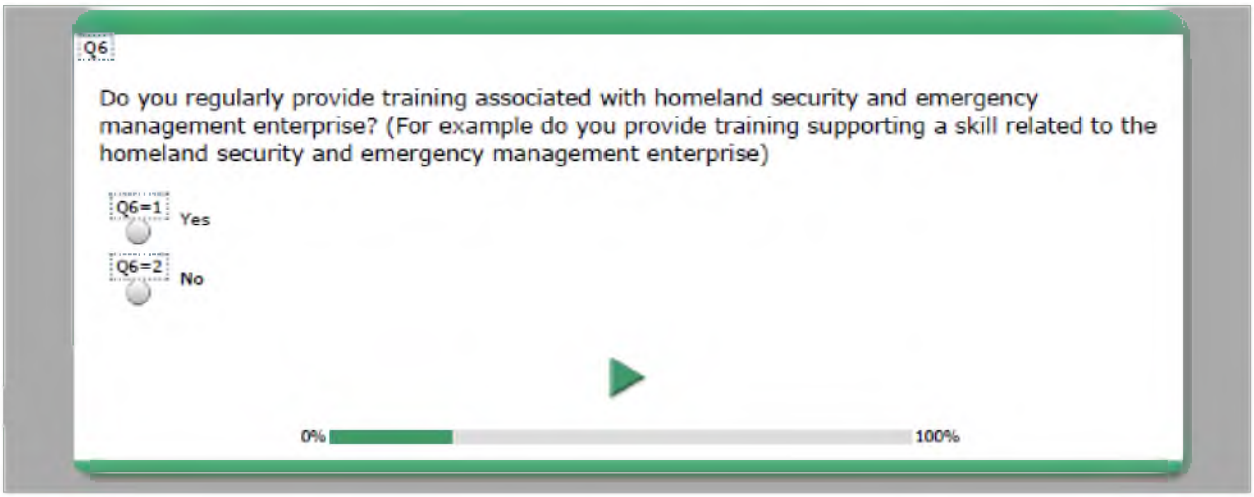
100%

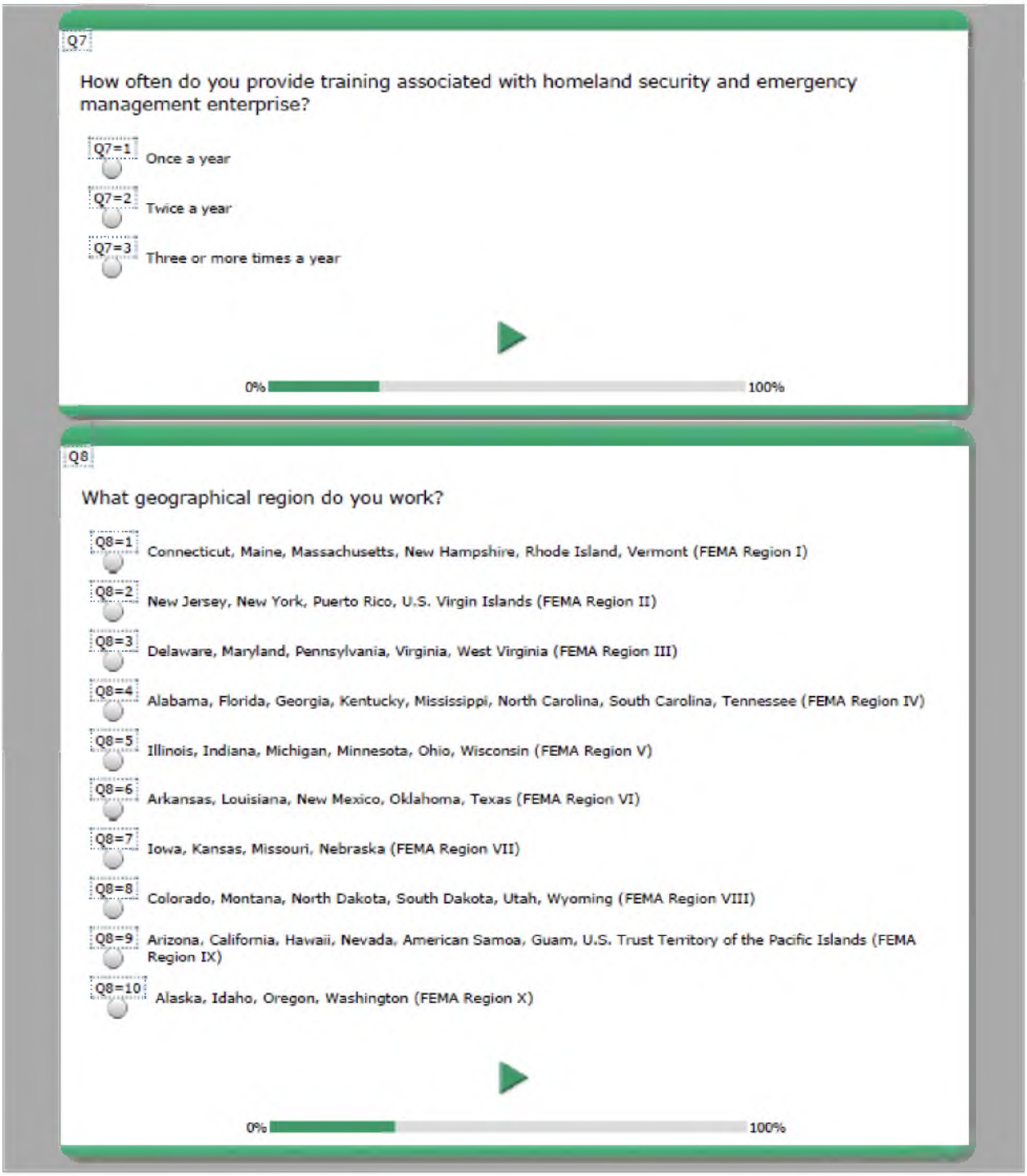

Q2
Do you currently serve as a practitioner or an academic within the Homeland Security and Emergency Management enterprise?
• Practitioner as defined for this study is an individual whose daily duties include activities associated with homeland security and emergency management and associated occupations within the public/private sector at the Federal, State local level.
• Academic as defined for this study is an individual whose daily duties include educational teaching activities associated with homeland security and emergency management and associated occupations for credit at either a private, state or for profit college or university.
Q2=1
Practitioner
Q2=2
Academic
0%
100%

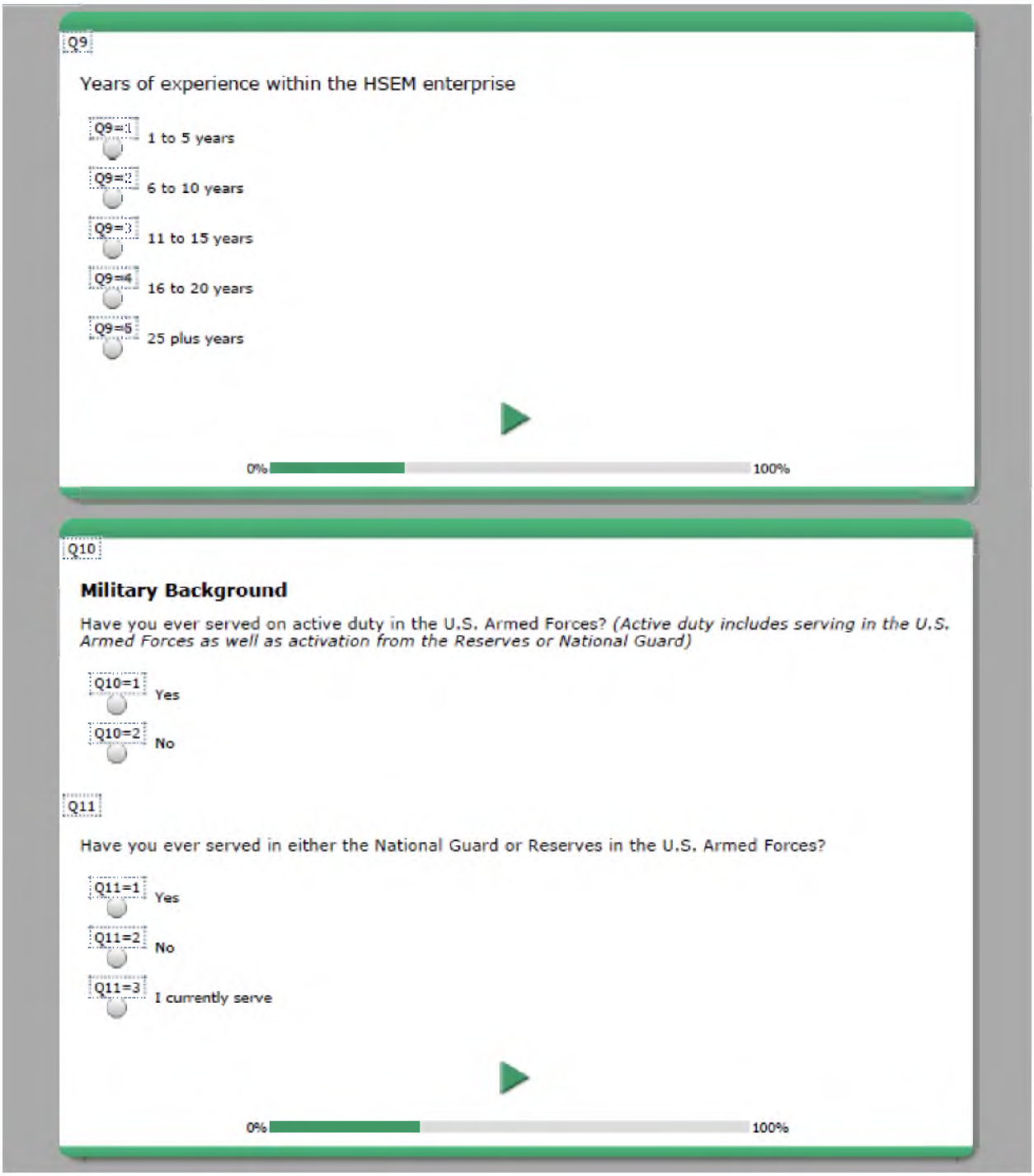

Q3
Please check your associated occupation.
Occupations
Q3=1
Firefighter
Q3=2
Law Enforcement Officer
Q3=3
Emergency Manager (Federal, State or Local level)
Q3=4
Wildland Firefighter
Q3=5
Paramedic /EMT
Q3=6
Security (Private, Federal ?)
Q3=7
Military (Active, Guard, Reserve)
Q3=8
Environmental Health and Safety
Q3=9
Business Continuity
Q3=10
Cyber Security or InfoSec
Q3=11
Red Cross
Q3=12
Q3_12_other
Other
0%
100%

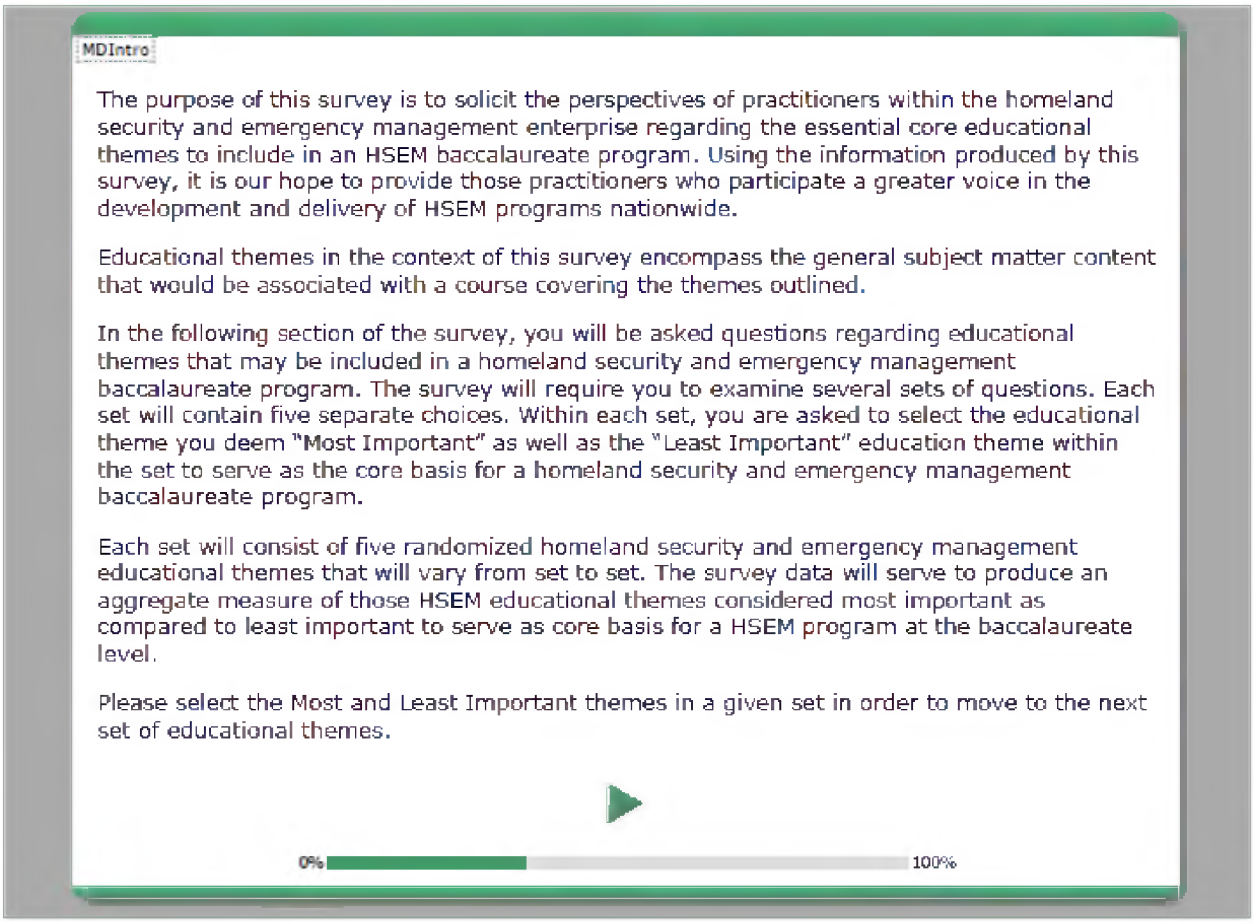

Q4
Do you regularly teach classes associated with homeland security and emergency management enterprise? (For example, do you teach courses for either a community college or university)
Q4=1
Yes
Q4=2
No
0%
100%


Q5
How often do you teach classes associated with homeland security and emergency management enterprise?
Q5=1
Once a year
Q5=2
Twice a year
Q5=3
Three or more times a year
0%
100%


Q6
Do you regularly provide training associated with homeland security and emergency management enterprise? (For example do you provide training supporting a skill related to the homeland security and emergency management enterprise)
Q6=1
Yes
Q6=2
No
0%
100%


Q7
How often do you provide training associated with homeland security and emergency management enterprise?
Q7=1
Once a year
Q7=2
Twice a year
Q7=3
Three or more times a year
0%
100%
Q8
What geographical region do you work?
Q8=1
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont (FEMA Region I)
Q8=2
New Jersey, New York, Puerto Rico, U.S. Virgin Islands (FEMA Region II)
Q8=3
Delaware, Maryland, Pennsylvania, Virginia, West Virginia (FEMA Region III)
Q8=4
Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee (FEMA Region IV)
Q8=5
Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin (FEMA Region V)
Q8=6
Arkansas, Louisiana, New Mexico, Oklahoma, Texas (FEMA Region VI)
Q8=7
Iowa, Kansas, Missouri, Nebraska (FEMA Region VII)
Q8=8
Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming (FEMA Region VIII)
Q8=9
Arizona, California, Hawaii, Nevada, American Samoa, Guam, U.S. Trust Territory of the Pacific Islands (FEMA Region IX)
Q8=10
Alaska, Idaho, Oregon, Washington (FEMA Region X)
0%
100%


Q9
Years of experience within the HSEM enterprise
Q9=1
1 to 5 years
Q9=2
6 to 10 years
Q9=3
11 to 15 years
Q9=4
16 to 20 years
Q9=5
25 plus years
0%
100%
Q10
Military Background
Have you ever served on active duty in the U.S. Armed Forces? (Active duty includes serving in the U.S. Armed Forces as well as activation from the Reserves or National Guard)
Q10=1
Yes
Q10=2
No
Q11
Have you ever served in either the National Guard or Reserves in the U.S. Armed Forces?
Q11=1
Yes
Q11=2
No
Q11=3
I currently serve
0%
100%


MDIntro
The purpose of this survey is to solicit the perspectives of practitioners within the homeland security and emergency management enterprise regarding the essential core educational themes to include in an HSEM baccalaureate program. Using the information produced by this survey, it is our hope to provide those practitioners who participate a greater voice in the development and delivery of HSEM programs nationwide.
Educational themes in the context of this survey encompass the general subject matter content that would be associated with a course covering the themes outlined.
In the following section of the survey, you will be asked questions regarding educational themes that may be included in a homeland security and emergency management baccalaureate program. The survey will require you to examine several sets of questions. Each set will contain five separate choices. Within each set, you are asked to select the educational theme you deem "Most Important" as well as the "Least Important" education theme within the set to serve as the core basis for a homeland security and emergency management baccalaureate program.
Each set will consist of five randomized homeland security and emergency management educational themes that will vary from set to set. The survey data will serve to produce an aggregate measure of those HSEM educational themes considered most important as compared to least important to serve as core basis for a HSEM program at the baccalaureate level.
Please select the Most and Least Important themes in a given set in order to move to the next set of educational themes.
0%
100%

MD_1

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(1 of 18)

	Most Important	Least Important
Cyber Security	MD_1_b=49	MD_1_w=49
Psychological Dimensions of disaster	MD_1_b=35	MD_1_w=35
Politics of Homeland Security	MD_1_b=73	MD_1_w=73
Hazard prevention and mitigation	MD_1_b=9	MD_1_w=9
Systems Integration and Administration of Homeland Security	MD_1_b=47	MD_1_w=47

Click the 'Next' button to continue...

0% 100%

MD_2

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(2 of 18)

	Most Important	Least Important
Hurricanes, cyclones, typhoons and coastal erosion	MD_2_b=18	MD_2_w=18
Ethical Issues	MD_2_b=69	MD_2_w=69
National Security and terrorism hazards	MD_2_b=20	MD_2_w=20
Public administration and emergency management	MD_2_b=25	MD_2_w=25
Forest fire, wildfire and conflagration	MD_2_b=16	MD_2_w=16

Click the 'Next' button to continue...

0% 100%

MD_3

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(3 of 18)

	Most Important	Least Important
Strategic Communications	MD_3_b=64	MD_3_w=64
Disaster warning systems and citizen response to warnings	MD_3_b=6	MD_3_w=6
Modeling & Simulation	MD_3_b=84	MD_3_w=84
Preparedness	MD_3_b=56	MD_3_w=56
Role of State and Local Governments	MD_3_b=59	MD_3_w=59

Click the 'Next' button to continue...

0% 100%

MD_4

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(4 of 18)

	Most Important	Least Important
Psychology of Homeland Security	MD_4_b=75	MD_4_w=75
Nuclear power plant hazards	MD_4_b=21	MD_4_w=21
Human Resource Management	MD_4_b=83	MD_4_w=83
Earthquake, tsunami and geologic hazards	MD_4_b=14	MD_4_w=14
Intelligence	MD_4_b=43	MD_4_w=43

Click the 'Next' button to continue...

0% 100%

MD_5

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(5 of 18)

	Most Important	Least Important
Sociology of disasters	MD_5_b=26	MD_5_w=26
Future of Homeland Security	MD_5_b=55	MD_5_w=55
Research methods and analysis	MD_5_b=29	MD_5_w=29
Fire community and emergency management	MD_5_b=30	MD_5_w=30
Civilian & Military Relationships	MD_5_b=52	MD_5_w=52

Click the 'Next' button to continue...

0% 100%

MD_6

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(6 of 18)

	Most Important	Least Important
Volcano	MD_6_b=24	MD_6_w=24
Decision-Making	MD_6_b=68	MD_6_w=68
Exercises and Training	MD_6_b=81	MD_6_w=81
Risk Management and Analysis	MD_6_b=37	MD_6_w=37
Overview of Homeland Security Mission Areas	MD_6_b=44	MD_6_w=44

Click the 'Next' button to continue...

0% 100%

MD_7

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(7 of 18)

	Most Important	Least Important
Disaster response and operations	MD_7_b=8	MD_7_w=8
State and local emergency management	MD_7_b=3	MD_7_w=3
Civil Liberties	MD_7_b=67	MD_7_w=67
Emergency Management	MD_7_b=79	MD_7_w=79
Critical Infrastructure Protection	MD_7_b=38	MD_7_w=38

Click the 'Next' button to continue...

0% 100%

MD_8

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(8 of 18)

	Most Important	Least Important
Homeland Security Policies & Strategies	MD_8_b=40	MD_8_w=40
Ethics and emergency management	MD_8_b=32	MD_8_w=32
Federalism	MD_8_b=63	MD_8_w=63
Public health and emergency management	MD_8_b=31	MD_8_w=31
Responses to Terrorism	MD_8_b=41	MD_8_w=41

Click the 'Next' button to continue...

0% 100%

MD_9

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(9 of 18)

	Most Important	Least Important
Biological, toxic agents and epidemic hazards	MD_9_b=12	MD_9_w=12
Media, disasters and emergency management	MD_9_b=33	MD_9_w=33
General emergency management	MD_9_b=1	MD_9_w=1
Federal Role in Homeland Security	MD_9_b=54	MD_9_w=54
Public Health & Medical Issues	MD_9_b=58	MD_9_w=58

Click the 'Next' button to continue...

0% 100%

MD_10

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(10 of 18)

	Most Important	Least Important
Legal issues in emergency management	MD_10_b=34	MD_10_w=34
Thunderstorm, lightning, and tornado	MD_10_b=22	MD_10_w=22
Border Security	MD_10_b=48	MD_10_w=48
Transportation accidents	MD_10_b=23	MD_10_w=23
Media	MD_10_b=72	MD_10_w=72

Click the 'Next' button to continue...

0% 100%

MD_11

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(11 of 18)

	Most Important	Least Important
Basics of Homeland Security	MD_11_b=66	MD_11_w=66
Hazardous materials	MD_11_b=17	MD_11_w=17
Geospatial Dimensions of Homeland Security	MD_11_b=82	MD_11_w=82
Profession of emergency management	MD_11_b=2	MD_11_w=2
Landslide, mudslide, and rockslide	MD_11_b=19	MD_11_w=19

Click the 'Next' button to continue...

0% 100%

MD_12

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(12 of 18)

	Most Important	Least Important
Emergency management skills	MD_12_b=4	MD_12_w=4
Comparative & International Homeland Security	MD_12_b=53	MD_12_w=53
Sociology of Homeland Security (e.g., politics, roles, behavior, power, conflict, communication)	MD_12_b=46	MD_12_w=46
Recovery After an Attack	MD_12_b=76	MD_12_w=76
Leadership	MD_12_b=71	MD_12_w=71

Click the 'Next' button to continue...

0% 100%

MD_13

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(13 of 18)

	Most Important	Least Important
Human Resource Management	MD_13_b=83	MD_13_w=83
Homeland Security Policies & Strategies	MD_13_b=40	MD_13_w=40
Disaster warning systems and citizen response to warnings	MD_13_b=6	MD_13_w=6
Engineering	MD_13_b=80	MD_13_w=80
Information technology and emergency management	MD_13_b=11	MD_13_w=11

Click the 'Next' button to continue...

0% 100%

MD_14

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(14 of 18)

	Most Important	Least Important
Weapons of Mass Destruction	MD_14_b=61	MD_14_w=61
Private Sector Role in Homeland Security	MD_14_b=57	MD_14_w=57
Economic aspects of disasters	MD_14_b=28	MD_14_w=28
Laws Related to Homeland Security	MD_14_b=39	MD_14_w=39
Critical Thinking	MD_14_b=62	MD_14_w=62

Click the 'Next' button to continue...

0% 100%

MD_15

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(15 of 18)

	Most Important	Least Important
Terrorism	MD_15_b=42	MD_15_w=42
Homeland Security Technology	MD_15_b=60	MD_15_w=60
Prevention of Terrorism	MD_15_b=74	MD_15_w=74
Role of Communities in Homeland Security	MD_15_b=85	MD_15_w=85
Business and industry crisis and accident management	MD_15_b=13	MD_15_w=13

Click the 'Next' button to continue...

0% 100%

MD_16

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(16 of 18)

	Most Important	Least Important
Engineering	MD_16_b=80	MD_16_w=80
Floods, flash floods and dam failure	MD_16_b=15	MD_16_w=15
Transportation Security	MD_16_b=65	MD_16_w=65
History of Homeland Security and Terrorism	MD_16_b=50	MD_16_w=50
Disaster planning and preparedness	MD_16_b=5	MD_16_w=5

Click the 'Next' button to continue...

0% 100%

MD_17

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(17 of 18)

	Most Important	Least Important
Citizen and community disaster preparedness	MD_17_b=7	MD_17_w=7
Threats to the Homeland	MD_17_b=36	MD_17_w=36
Risk Communications	MD_17_b=77	MD_17_w=77
Interagency Coordination	MD_17_b=70	MD_17_w=70
Utilities and Industrial Facilities Security	MD_17_b=78	MD_17_w=78

Click the 'Next' button to continue....

0% 100%

MD_18

Considering only these 5 educational themes, please select the educational theme you deem "Most Important" and "Least Important" to serve as the core basis for a homeland security and emergency management baccalaureate program.

(18 of 18)

	Most Important	Least Important
Disaster relief and recovery	MD_18_b=10	MD_18_w=10
Organization of Homeland Security	MD_18_b=45	MD_18_w=45
Political aspects of disasters	MD_18_b=27	MD_18_w=27
Role of Individuals in Homeland Security	MD_18_b=86	MD_18_w=86
Strategic Planning & Budgeting	MD_18_b=51	MD_18_w=51

Click the 'Next' button to continue...

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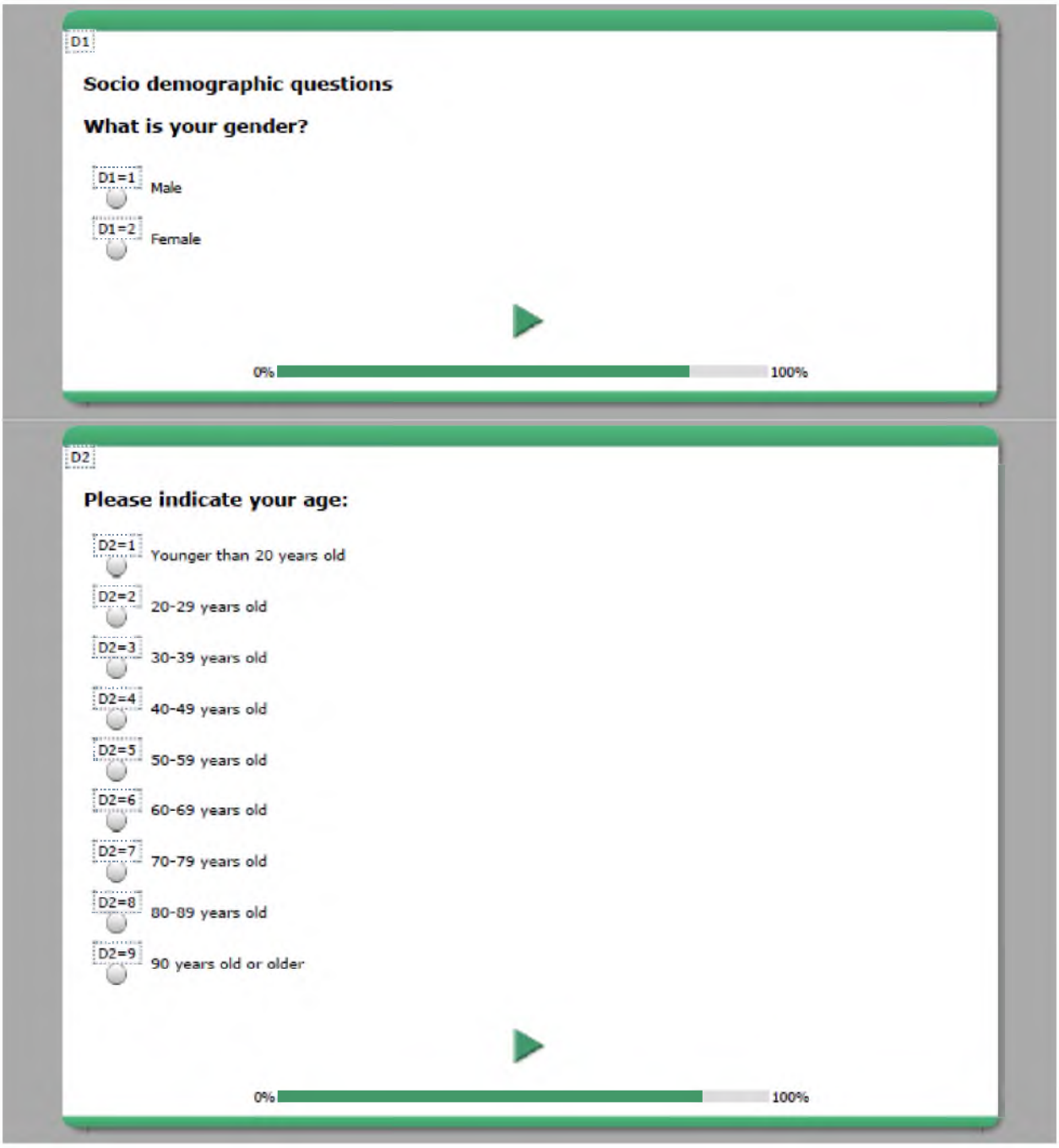
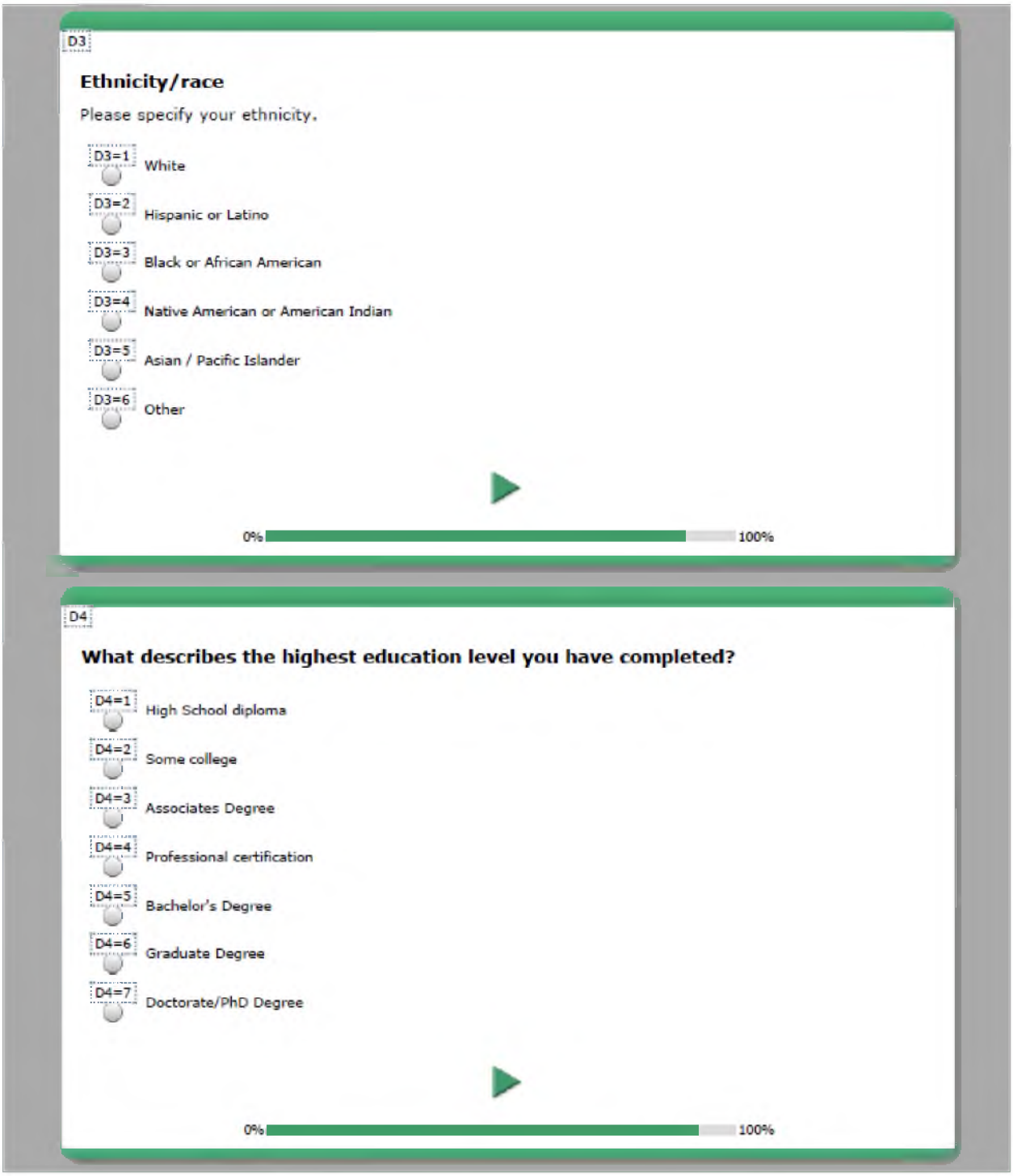
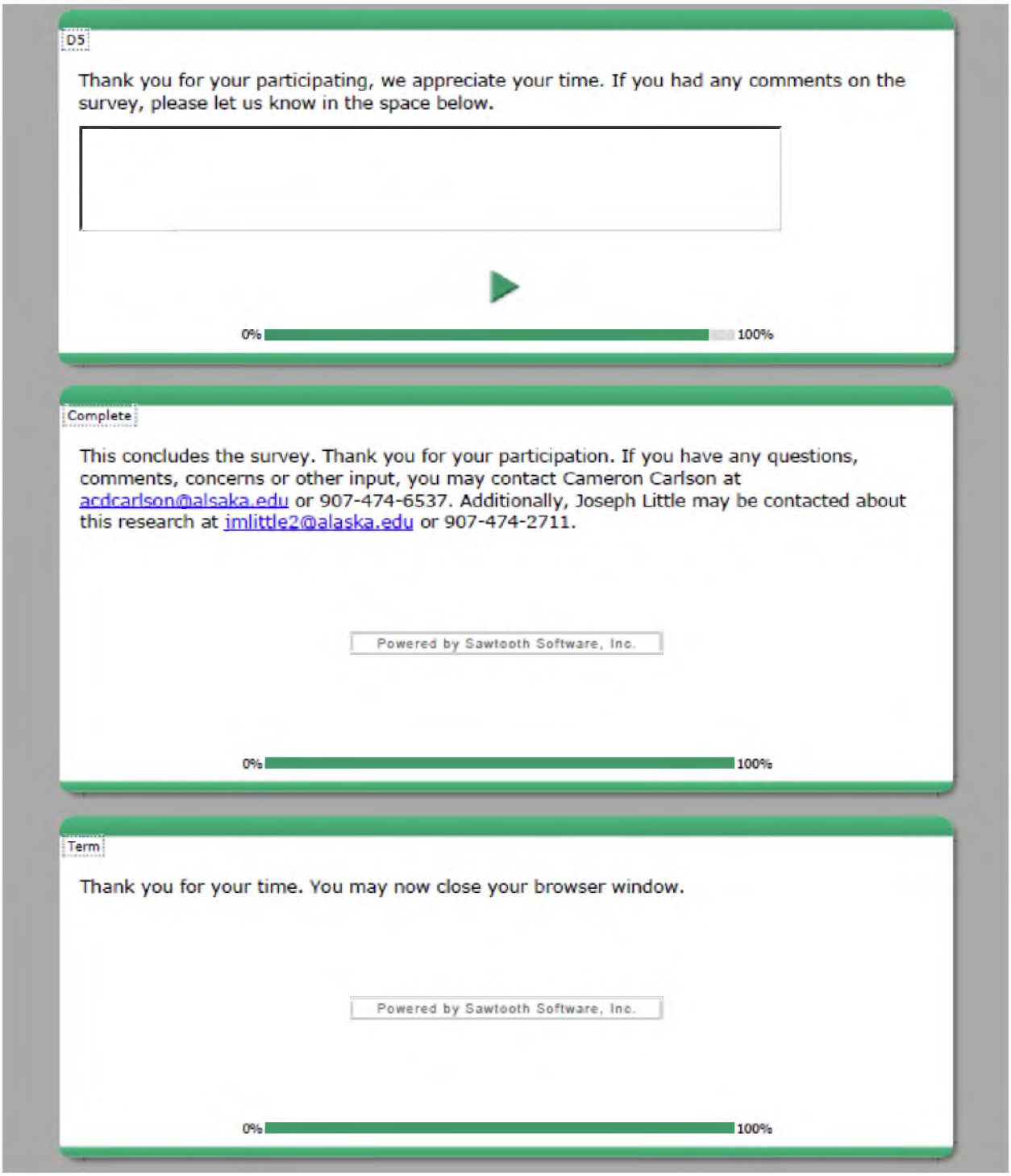

D1
Socio demographic questions
What is your gender?
D1=1
Male
D1=2
Female
0%
100%
D2
Please indicate your age:
D2=1
Younger than 20 years old
D2=2
20-29 years old
D2=3
30-39 years old
D2=4
40-49 years old
D2=5
50-59 years old
D2=6
60-69 years old
D2=7
70-79 years old
D2=8
80-89 years old
D2=9
90 years old or older
0%
100%


D3
Ethnicity/race
Please specify your ethnicity.
D3=1
White
D3=2
Hispanic or Latino
D3=3
Black or African American
D3=4
Native American or American Indian
D3=5
Asian / Pacific Islander
D3=6
Other
0%
100%
D4
What describes the highest education level you have completed?
D4=1
High School diploma
D4=2
Some college
D4=3
Associates Degree
D4=4
Professional certification
D4=5
Bachelor's Degree
D4=6
Graduate Degree
D4=7
Doctorate/PhD Degree
0%
100%


D5
Thank you for your participating, we appreciate your time. If you had any comments on the survey, please let us know in the space below.
0%
100%
Complete
This concludes the survey. Thank you for your participation. If you have any questions, comments, concerns or other input, you may contact Cameron Carlson at acdcarlson@alsaka.edu or 907-474-6537. Additionally, Joseph Little may be contacted about this research at jmlittle2@alaska.edu or 907-474-2711.
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Term
Thank you for your time. You may now close your browser window.
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Appendix I

Raw Data

Table I1

Simple Counts (Total Survey, Not Rank Ordered)

Rank	Item	Label (Educational Theme)	Times selected best	Best count proportion	Times selected worst	Worst count proportion
17	1	General emergency management	391	.377	94	.091
26	2	Profession of emergency management	334	.321	177	.170
4	3	State and local emergency management	480	.460	23	.022
9	4	Emergency management skills	488	.467	48	.046
1	5	Disaster planning and preparedness	621	.596	10	.010
27	6	Disaster warning systems and citizen response to warnings	292	.271	127	.118
13	7	Citizen and community disaster preparedness	437	.421	55	.053
2	8	Disaster response and operations	519	.501	26	.025
12	9	Hazard prevention and mitigation	408	.392	28	.027
18	10	Disaster relief and recovery	344	.330	27	.026
24	11	Information technology and emergency management	269	.260	87	.084
58	12	Biological, toxic agents and epidemic hazards	84	.081	211	.203
54	13	Business and industry crisis and accident management	113	.109	226	.217
69	14	Earthquake, tsunami and geologic hazards	67	.064	272	.262
61	15	Floods, flash floods and dam failure	68	.065	244	.235
79	16	Forest fire, wildfire and conflagration	37	.036	380	.368
66	17	Hazardous materials	50	.048	249	.239
72	18	Hurricanes, cyclones, typhoons and coastal erosion	77	.074	323	.312
84	19	Landslide, mudslide, and rockslide	19	.018	539	.517
35	20	National security and terrorism hazards	222	.213	101	.097
83	21	Nuclear power plant hazards	19	.018	449	.433
77	22	Thunderstorm, lightning, and tornado	55	.053	389	.375
82	23	Transportation accidents	24	.023	386	.370
87	24	Volcanos	2	.002	787	.759
78	25	Winter and snow storms, blizzards and avalanches	57	.055	391	.376
14	26	Public administration and emergency management	420	.403	65	.062
50	27	Sociology of disasters	195	.188	257	.247
62	28	Political aspects of disasters	121	.116	341	.328
34	29	Economic aspects of disasters	201	.193	118	.113
68	30	Research methods and analysis	128	.123	378	.365
42	31	Fire community and emergency management	135	.130	155	.149
21	32	Public health and emergency management	274	.263	40	.038
29	33	Ethics and emergency management	242	.226	107	.100
19	34	Media, disasters and emergency management	313	.301	68	.065
28	35	Legal issues in emergency management	274	.265	119	.115
46	36	Psychological dimensions of disaster	155	.149	216	.208
39	37	Threats to the homeland	191	.184	143	.138
11	38	Risk management and analysis	448	.431	49	.047
20	39	Critical infrastructure protection	311	.299	51	.049
36	40	Laws related to homeland security	195	.188	140	.135
33	41	Homeland security policies & strategies	239	.229	156	.150
47	42	Responses to terrorism	120	.115	157	.151
44	43	Terrorism	129	.124	133	.128
43	44	Intelligence	146	.140	152	.146
48	45	Overview of homeland security mission areas	183	.176	254	.244
60	46	Organization of homeland security	114	.110	265	.256
32	47	Sociology of homeland security	322	.310	203	.195
53	48	Systems integration and administration of homeland security	186	.179	283	.272
81	49	Border security	55	.053	430	.416
37	50	Cyber security	174	.167	102	.098
65	51	History of homeland security and terrorism	96	.092	352	.339
22	52	Strategic planning & budgeting	310	.298	105	.101

Table I1 continued

Rank	Item	Label (Educational Theme)	Times selected best	Best count proportion	Times selected worst	Worst count proportion
67	53	Civilian & military relationships	81	.078	311	.300
71	54	Comparative & international homeland security	90	.087	381	.366
49	55	Federal role in homeland security	111	.107	163	.157
64	56	Future of homeland security	123	.118	331	.319
10	57	Preparedness	444	.429	31	.030
40	58	Private sector role in homeland security	177	.171	170	.164
41	59	Public health & medical issues	146	.140	129	.124
7	60	Role of state and local governments	463	.446	39	.038
59	61	Homeland security technology	93	.089	240	.231
70	62	Weapons of mass destruction	83	.08	308	.297
8	63	Critical thinking	463	.446	76	.073
86	64	Federalism	41	.039	594	.570
23	65	Strategic communications	262	.252	76	.073
63	66	Transportation security	41	.039	239	.230
31	67	Basics of homeland security	267	.257	134	.129
73	68	Civil liberties	73	.070	349	.336
15	69	Decision-making	413	.396	62	.059
45	70	Ethical issues	111	.107	178	.171
6	71	Interagency coordination	454	.435	31	.030
16	72	Leadership	420	.403	73	.070
55	73	Media	96	.09	247	.231
80	74	Politics of homeland security	78	.075	416	.399
51	75	Prevention of terrorism	137	.132	203	.195
75	76	Psychology of homeland security	67	.064	373	.357
38	77	Recovery after an attack	170	.163	126	.121
30	78	Risk communications	231	.222	85	.082
56	79	Utilities and industrial facilities security	92	.089	221	.213
3	80	Emergency management	519	.499	26	.025
84	81	Engineering	22	.021	592	.569
5	82	Exercises and training	481	.463	32	.031
74	83	Geospatial dimensions of homeland security	74	.071	381	.366
76	84	Human resource management	79	.076	408	.395
57	85	Modeling & simulation	122	.118	266	.257
25	86	Role of communities in homeland security	274	.263	93	.089
52	87	Role of individuals in homeland security	156	.150	236	.227

Table I2

Raw Scores (Total Survey, Not Rank Ordered)

Rank	Item	Label (educational theme)	Average	95% *CI* Lower	95% *CI* Upper
17	1	General emergency management	2.24	2.11	2.37
26	2	Profession of emergency management	1.11	0.97	1.26
4	3	State and local emergency management	3.08	3.01	3.16
9	4	Emergency management skills	2.88	2.77	2.99
1	5	Disaster planning and preparedness	4.02	3.94	4.11
27	6	Disaster warning systems and citizen response to warnings	1.11	1.01	1.21
13	7	Citizen and community disaster preparedness	2.51	2.41	2.61
2	8	Disaster response and operations	3.33	3.24	3.42
12	9	Hazard prevention and mitigation	2.52	2.45	2.60
18	10	Disaster relief and recovery	2.06	1.99	2.14
24	11	Information technology and emergency management	1.24	1.16	1.33
58	12	Biological, toxic agents and epidemic hazards	-0.91	-1.01	-0.82
54	13	Business and industry crisis and accident management	-0.71	-0.78	-0.63
69	14	Earthquake, tsunami and geologic hazards	-1.63	-1.72	-1.54
61	15	Floods, flash floods and dam failure	-1.13	-1.23	-1.04
79	16	Forest fire, wildfire and conflagration	-2.26	-2.36	-2.16
66	17	Hazardous materials	-1.53	-1.62	-1.44
72	18	Hurricanes, cyclones, typhoons and coastal erosion	-1.87	-1.98	-1.77
84	19	Landslide, mudslide, and rockslide	-3.61	-3.73	-3.49
35	20	National security and terrorism hazards	0.67	0.56	0.78
83	21	Nuclear power plant hazards	-2.84	-2.93	-2.76
77	22	Thunderstorm, lightning, and tornado	-2.14	-2.26	-2.03
82	23	Transportation accidents	-2.57	-2.64	-2.49
87	24	Volcanos	-5.67	-5.78	-5.56
78	25	Winter and snow storms, blizzards and avalanches	-2.23	-2.35	-2.11
14	26	Public administration and emergency management	2.46	2.33	2.58
50	27	Sociology of disasters	-0.56	-0.70	-0.42
62	28	Political aspects of disasters	-1.21	-1.35	-1.07
34	29	Economic aspects of disasters	0.71	0.61	0.81
68	30	Research methods and analysis	-1.56	-1.70	-1.42
42	31	Fire community and emergency management	-0.07	-0.15	0.02
21	32	Public health and emergency management	1.52	1.46	1.59
29	33	Ethics and emergency management	0.95	0.85	1.05
19	34	Media, disasters and emergency management	1.68	1.58	1.78
28	35	Legal issues in emergency management	1.06	0.96	1.15
46	36	Psychological dimensions of disaster	-0.31	-0.42	-0.20
39	37	Threats to the homeland	0.20	0.08	0.32
11	38	Risk management and analysis	2.61	2.51	2.71
20	39	Critical infrastructure protection	1.61	1.54	1.68
36	40	Laws related to homeland security	0.36	0.27	0.46
33	41	Homeland security policies & strategies	0.80	0.71	0.90
47	42	Responses to terrorism	-0.37	-0.48	-0.27
44	43	Terrorism	-0.13	-0.24	-0.02
43	44	Intelligence	-0.09	-0.17	0.00
48	45	Overview of homeland security mission areas	-0.42	-0.55	-0.29
60	46	Organization of homeland security	-1.06	-1.16	-0.95
32	47	Sociology of homeland security (e.g., politics, roles, behavior, power, conflict, communication)	0.86	0.68	1.04
53	48	Systems integration and administration of homeland security	-0.61	-0.73	-0.49
81	49	Border security	-2.55	-2.69	-2.42
37	50	Cyber security	0.33	0.24	0.41
65	51	History of homeland security and terrorism	-1.49	-1.61	-1.37
22	52	Strategic planning & budgeting	1.41	1.31	1.51
67	53	Civilian & military relationships	-1.54	-1.63	-1.46
71	54	Comparative & international homeland security	-1.77	-1.89	-1.65
49	55	Federal role in homeland security	-0.42	-0.51	-0.33
64	56	Future of homeland security	-1.47	-1.60	-1.35
10	57	Preparedness	2.74	2.66	2.82
40	58	Private sector role in homeland security	0.16	0.06	0.25

Table I2 continued

Rank	Item	Label (educational theme)	Average	95% *CI* Lower	95% *CI* Upper
41	59	Public health & medical issues	0.06	-0.01	0.13
7	60	Role of state and local governments	2.90	2.81	2.98
59	61	Homeland security technology	-1.05	-1.14	-0.97
70	62	Weapons of mass destruction	-1.63	-1.75	-1.51
8	63	Critical thinking	2.89	2.74	3.03
86	64	Federalism	-3.87	-3.98	-3.75
23	65	Strategic communications	1.37	1.28	1.46
63	66	Transportation security	-1.44	-1.52	-1.37
31	67	Basics of homeland security	0.90	0.79	1.01
73	68	Civil liberties	-1.92	-2.02	-1.82
15	69	Decision-making	2.38	2.26	2.50
45	70	Ethical issues	-0.21	-0.31	-0.12
6	71	Interagency coordination	2.92	2.85	2.99
16	72	Leadership	2.30	2.18	2.42
55	73	Media	-0.78	-0.88	-0.67
80	74	Politics of homeland security	-2.31	-2.43	-2.18
51	75	Prevention of terrorism	-0.56	-0.68	-0.44
75	76	Psychology of homeland security	-2.01	-2.11	-1.91
38	77	Recovery after an attack	0.22	0.15	0.29
30	78	Risk communications	0.93	0.85	1.00
56	79	Utilities and industrial facilities security	-0.88	-0.96	-0.79
3	80	Emergency management	3.23	3.14	3.33
84	81	Engineering	-3.60	-3.69	-3.51
5	82	Exercises and training	2.98	2.89	3.07
74	83	Geospatial dimensions of homeland security	-1.98	-2.09	-1.87
76	84	Human resource management	-2.05	-2.16	-1.94
57	85	Modeling & simulation	-0.88	-0.96	-0.79
25	86	Role of communities in homeland security	1.16	1.07	1.25
52	87	Role of individuals in homeland security	-0.59	-0.69	-0.49

Table I3

Rescaled Scores (Total Survey, Not Rank Ordered)

Rank	Item	Label (educational theme)	Average	95% *CI* Lower	95% *CI* Upper
18	1	General emergency management	2.16	2.09	2.22
25	2	Profession of emergency management	1.59	1.52	1.66
3	3	State and local emergency management	2.73	2.69	2.77
9	4	Emergency management skills	2.53	2.47	2.58
1	5	Disaster planning and preparedness	3.05	3.02	3.08
27	6	Disaster warning systems and citizen response to warnings	1.58	1.52	1.64
13	7	Citizen and community disaster preparedness	2.36	2.30	2.41
2	8	Disaster response and operations	2.79	2.75	2.83
10	9	Hazard prevention and mitigation	2.45	2.41	2.49
17	10	Disaster relief and recovery	2.17	2.12	2.22
24	11	Information technology and emergency management	1.63	1.58	1.68
56	12	Biological, toxic agents and epidemic hazards	0.56	0.52	0.60
57	13	Business and industry crisis and accident management	0.55	0.52	0.58
70	14	Earthquake, tsunami and geologic hazards	0.34	0.31	0.37
63	15	Floods, flash floods and dam failure	0.49	0.46	0.53
81	16	Forest fire, wildfire and conflagration	0.23	0.21	0.25
68	17	Hazardous materials	0.35	0.33	0.38
71	18	Hurricanes, cyclones, typhoons and coastal erosion	0.32	0.29	0.35
84	19	Landslide, mudslide, and rockslide	0.10	0.09	0.12
34	20	National security and terrorism hazards	1.32	1.26	1.38
82	21	Nuclear power plant hazards	0.13	0.11	0.14
76	22	Thunderstorm, lightning, and tornado	0.29	0.26	0.32
83	23	Transportation accidents	0.12	0.11	0.13
87	24	Volcanos	0.02	0.01	0.02
77	25	Winter and snow storms, blizzards and avalanches	0.29	0.26	0.32
14	26	Public administration and emergency management	2.27	2.21	2.33
46	27	Sociology of disasters	0.85	0.79	0.91
54	28	Political aspects of disasters	0.62	0.57	0.67
35	29	Economic aspects of disasters	1.32	1.26	1.37
59	30	Research methods and analysis	0.54	0.49	0.59
42	31	Fire community and emergency management	0.90	0.85	0.94
21	32	Public health and emergency management	1.83	1.79	1.87
31	33	Ethics and emergency management	1.46	1.40	1.52
20	34	Media, disasters and emergency management	1.89	1.84	1.95
28	35	Legal issues in emergency management	1.53	1.47	1.59
47	36	Psychological dimensions of disaster	0.85	0.80	0.91
37	37	Threats to the homeland	1.10	1.04	1.17
11	38	Risk management and analysis	2.41	2.36	2.46
19	39	Critical infrastructure protection	1.90	1.85	1.95
36	40	Laws related to homeland security	1.13	1.08	1.18
33	41	Homeland security policies & strategies	1.38	1.33	1.44
49	42	Responses to terrorism	0.80	0.75	0.85
41	43	Terrorism	0.92	0.87	0.98
45	44	Intelligence	0.87	0.82	0.92
44	45	Overview of homeland security mission areas	0.88	0.82	0.93
58	46	Organization of homeland security	0.55	0.51	0.60
29	47	Sociology of homeland security	1.51	1.44	1.59
51	48	Systems integration and administration of homeland security	0.76	0.71	0.81
74	49	Border security	0.31	0.27	0.35
38	50	Cyber security	1.09	1.04	1.14
65	51	History of homeland security and terrorism	0.47	0.43	0.51
22	52	Strategic planning & budgeting	1.74	1.69	1.80
69	53	Civilian & military relationships	0.35	0.32	0.38
67	54	Comparative & international homeland security	0.40	0.37	0.44
52	55	Federal role in homeland security	0.73	0.68	0.77
62	56	Future of homeland security	0.50	0.46	0.55
8	57	Preparedness	2.55	2.50	2.60
39	58	Private sector role in homeland security	1.01	0.96	1.06
43	59	Public health & medical issues	0.89	0.85	0.93

Table I3 continued

Rank	Item	Label (educational theme)	Average	95% *CI*	
				Lower	Upper
7	60	Role of state and local governments	2.60	2.56	2.65
64	61	Homeland security technology	0.48	0.45	0.52
66	62	Weapons of mass destruction	0.44	0.40	0.48
12	63	Critical thinking	2.39	2.33	2.46
85	64	Federalism	0.09	0.08	0.11
23	65	Strategic communications	1.71	1.66	1.76
72	66	Transportation security	0.32	0.30	0.35
30	67	Basics of homeland security	1.47	1.41	1.54
78	68	Civil liberties	0.29	0.26	0.32
15	69	Decision-making	2.24	2.18	2.31
48	70	Ethical issues	0.82	0.77	0.87
5	71	Interagency coordination	2.68	2.65	2.72
16	72	Leadership	2.18	2.12	2.25
55	73	Media	0.62	0.58	0.66
75	74	Politics of homeland security	0.31	0.27	0.34
50	75	Prevention of terrorism	0.78	0.73	0.84
80	76	Psychology of homeland security	0.28	0.25	0.31
40	77	Recovery after an attack	0.99	0.94	1.03
32	78	Risk communications	1.41	1.37	1.46
61	79	Utilities and industrial facilities security	0.52	0.49	0.56
4	80	Emergency management	2.72	2.68	2.77
86	81	Engineering	0.07	0.06	0.08
6	82	Exercises and training	2.64	2.60	2.68
73	83	Geospatial dimensions of homeland security	0.32	0.28	0.35
79	84	Human resource management	0.29	0.26	0.32
60	85	Modeling & simulation	0.53	0.50	0.57
26	86	Role of communities in homeland security	1.59	1.54	1.65
53	87	Role of individuals in homeland security	0.70	0.65	0.74

Table I4

Probability of Choice (Total Survey, Not Rank Ordered)

Rank	Item	Label (educational theme)	Average	95% *CI* Lower	95% *CI* Upper
18	1	General emergency management	62.62	60.67	64.57
25	2	Profession of emergency management	46.58	44.47	48.69
3	3	State and local emergency management	79.03	77.92	80.14
9	4	Emergency management skills	73.18	71.59	74.77
1	5	Disaster planning and preparedness	88.12	87.26	88.98
27	6	Disaster warning systems and citizen response to warnings	45.40	43.68	47.13
13	7	Citizen and community disaster preparedness	68.09	66.44	69.74
2	8	Disaster response and operations	80.63	79.44	81.82
10	9	Hazard prevention and mitigation	70.97	69.67	72.26
17	10	Disaster relief and recovery	62.80	61.34	64.26
24	11	Information technology and emergency management	47.38	45.77	48.98
58	12	Biological, toxic agents and epidemic hazards	15.86	14.74	16.98
57	13	Business and industry crisis and accident management	15.97	15.04	16.90
70	14	Earthquake, tsunami and geologic hazards	9.57	8.79	10.34
63	15	Floods, flash floods and dam failure	13.97	12.98	14.97
81	16	Forest fire, wildfire and conflagration	6.49	5.85	7.13
68	17	Hazardous materials	10.01	9.23	10.78
71	18	Hurricanes, cyclones, typhoons and coastal erosion	9.18	8.33	10.02
84	19	Landslide, mudslide, and rockslide	2.87	2.43	3.31
35	20	National security and terrorism hazards	37.57	35.86	39.28
83	21	Nuclear power plant hazards	3.50	3.09	3.91
79	22	Thunderstorm, lightning, and tornado	8.30	7.49	9.11
82	23	Transportation accidents	3.56	3.27	3.84
87	24	Volcanos	0.48	0.31	0.65
78	25	Winter and snow storms, blizzards and avalanches	8.31	7.47	9.15
14	26	Public administration and emergency management	66.19	64.34	68.05
45	27	Sociology of disasters	25.16	23.42	26.90
54	28	Political aspects of disasters	18.40	16.92	19.89
34	29	Economic aspects of disasters	38.61	36.94	40.28
59	30	Research methods and analysis	15.64	14.22	17.07
42	31	Fire community and emergency management	25.62	24.30	26.94
21	32	Public health and emergency management	52.86	51.59	54.13
30	33	Ethics and emergency management	42.71	40.97	44.45
19	34	Media, disasters and emergency management	55.29	53.55	57.04
28	35	Legal issues in emergency management	44.80	43.08	46.52
46	36	Psychological dimensions of disaster	25.07	23.51	26.63
37	37	Threats to the homeland	31.38	29.62	33.14
11	38	Risk management and analysis	70.15	68.59	71.71
20	39	Critical infrastructure protection	54.35	52.92	55.78
36	40	Laws related to homeland security	32.74	31.21	34.28
33	41	Homeland security policies & strategies	39.99	38.32	41.67
49	42	Responses to terrorism	22.75	21.30	24.19
41	43	Terrorism	26.28	24.71	27.85
47	44	Intelligence	24.91	23.52	26.29
43	45	Overview of homeland security mission areas	25.36	23.69	27.04
56	46	Organization of homeland security	16.00	14.79	17.20
29	47	Sociology of homeland security (e.g., politics, roles, behavior, power, conflict, communication)	44.23	41.95	46.50
51	48	Systems integration and administration of homeland security	21.99	20.48	23.50
75	49	Border security	8.73	7.65	9.81
38	50	Cyber security	31.07	29.58	32.56
65	51	History of homeland security and terrorism	13.61	12.40	14.81
22	52	Strategic planning & budgeting	50.89	49.13	52.65
69	53	Civilian & military relationships	9.92	9.11	10.73
67	54	Comparative & international homeland security	11.62	10.52	12.72
52	55	Federal role in homeland security	20.94	19.71	22.17
62	56	Future of homeland security	14.37	13.10	15.65
8	57	Preparedness	73.68	72.37	74.99
39	58	Private sector role in homeland security	29.34	27.83	30.85
44	59	Public health & medical issues	25.36	24.25	26.48

Table I4 continued

Rank	Item	Label (educational theme)	Average	95% *CI* Lower	95% *CI* Upper
7	60	Role of state and local governments	75.43	74.08	76.77
64	61	Homeland security technology	13.76	12.78	14.74
66	62	Weapons of mass destruction	12.48	11.28	13.68
12	63	Critical thinking	69.53	67.62	71.44
85	64	Federalism	2.60	2.16	3.05
23	65	Strategic communications	49.89	48.29	51.49
72	66	Transportation security	9.10	8.46	9.74
31	67	Basics of homeland security	42.66	40.83	44.48
77	68	Civil liberties	8.36	7.57	9.16
15	69	Decision-making	65.37	63.54	67.21
48	70	Ethical issues	23.85	22.51	25.19
5	71	Interagency coordination	77.75	76.67	78.82
16	72	Leadership	63.57	61.68	65.46
55	73	Media	18.40	17.19	19.60
74	74	Politics of homeland security	9.01	8.01	10.02
50	75	Prevention of terrorism	22.19	20.63	23.75
80	76	Psychology of homeland security	8.06	7.27	8.86
40	77	Recovery after an attack	28.10	26.89	29.31
32	78	Risk communications	41.23	39.80	42.66
61	79	Utilities and industrial facilities security	14.96	13.97	15.95
4	80	Emergency management	78.68	77.36	80.01
86	81	Engineering	2.05	1.73	2.37
6	82	Exercises and training	76.42	75.11	77.73
73	83	Geospatial dimensions of homeland security	9.10	8.18	10.03
76	84	Human resource management	8.57	7.70	9.45
60	85	Modeling & simulation	15.37	14.35	16.39
26	86	Role of communities in homeland security	46.13	44.51	47.74
53	87	Role of individuals in homeland security	20.10	18.80	21.40